AMERICAN METEOROLOGICAL SOCIETY
016.5515
A 512M
Illinois U Library

meteorological

abstracts and bibliography

Bibliography on Climatology of the Near East, p. 373

. 2 May, 1951 No. 5

METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY

Editor and Technical Supervisor: MALCOLM RIGBY

Corresponding Editor: DR. C. E. P. BROOKS

EDITORIAL STAFF

ISADORE L. DORDICK, *Analyst*
WILHELM NUPEN, *Analyst*
MARY L. RICE, *Assistant Editor-Bibliographer*
HARRIS P. KRAMER, *Bibliographer-Analyst*
WINIFRED SCHRAITLE, *Cataloguer*
KATHERINE MARTINOFF, *Technical Editor*

***EDITORIAL OFFICE:** Washington, D. C. **P.O. ADDRESS:** Box 1736, Washington 13, D. C. Telephone: REpublic 6278.

ADMINISTRATIVE OFFICE: American Meteorological Society, Office of Executive Secretary, 3 Joy Street, Boston 8, Mass.

* Address all business communications, orders and inquiries to the Executive Secretary, Mr. Kenneth C. Spengler, 3 Joy Street, Boston 8, Mass. Exchanges and reprints may be sent direct to P. O. Box 1736, Washington 13, D. C.

METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY is a monthly publication devoted to:

A. Current Abstracts in English on important meteorological literature in every language.

B. Bibliographic references to other items of interest to the profession.

C. Selective, annotated bibliographies on subjects of immediate and special interest to meteorologists.

SUBSCRIPTION RATE: $5.00 per year to members and non members. Single copies 75¢.

This publication has been made possible through support and sponsorship extended by the Geophysical Research Directorate of the Air Force Cambridge Research Laboratories, under Contract No. A. F. 19 (122) 82. It is published for technical information only and does not represent the recommendations or conclusions of the sponsoring agency.

METEOROLOGICAL ABSTRACTS AND BIBLIOGRAPHY

MALCOLM RIGBY, Editor

Vol. 2 MAY 1951 No. 5

SPECIAL FEATURE IN THIS ISSUE

A Selective Annotated Bibliography on Climatology of The Near East

(*For complete table of contents see back cover*)

Published monthly at Prince and Lemon Streets, Lancaster, Pa., by the AMERICAN METEOROLOGICAL SOCIETY, 3 Joy Street, Boston 8, Mass.

Printed and issued by: Lancaster Press, Inc.

FOREWORD

Meteorological Abstracts and Bibliography is a monthly publication whose purpose is to bring to the attention of meteorologists current literature in their field and in related fields and to provide bibliographic information on various subjects, as interest demands.

Part I contains from 100 to 200 abstracts of current periodical literature and monographs in the fields of meteorology, hydrology, oceanography, etc. These abstracts are arranged according to the Universal Decimal Classification.

Part II of each issue comprises a special annotated bibliography of from 50 to 250 important references on a special subject without respect to recency of material. No attempt is made to prepare exhaustive bibliographies; instead, the aim is to include a representative cross section of the various aspects of a subject. Preference is given to recent material, comprehensive works, material from obscure sources, and items with good bibliographies.

Vol. 1, No. 1–11, Jan.–Nov. 1950 carried the following bibliographies: *Atmospheric Pollution, Aerobiology, Cloud Physics and "Rainmaking," Hail, Tornadoes, Volcanic Dust, Climatic Changes, Thunderstorms, Icing, Acoustical Propagation* and *Evaporation.*

Bibliographies published this year were:

1. **Extended Forecasting,** Vol. 2, No. 1, Jan. 1951.
2. **Long Range Forecasting,** Vol. 2, No. 2, Feb. 1951.
3. **Soil Temperature,** Vol. 2, No. 3, March 1951.
4. **Constants, Units, Tables and Diagrams,** Vol. 2, No. 4, April 1951.
5. **Climate of the Near East,** Vol. 2, No. 5, May 1951.

Forthcoming bibliographies will be:

6. **Climate of the Middle East,** Vol. 2, No. 6, June 1951.
7. **Special Winds,** Vol. 2, No. 7, July 1951.
8. **Radar Storm Detection,** Vol. 2, No. 8, Aug. 1951.

Other bibliographies in preparation are: *Carbon Dioxide in the Atmosphere, Climate and Cancer, Machine Methods in Meteorology, Microwave Transmission, Mountain Meteorology, Objective Forecasting,* and *Turbulence.*

Part III contains a listing of the contents of those journals which are primarily meteorological. These are published in the earliest issue where space permits.

Part IV is made up of author, subject and geographical indexes. In the June and December issues cumulative indexes are published.

EXPLANATIONS

Location of material: For each entry, a symbol is given for at least one library where the material may be found. The Union List of Serials (Gregory) is the source of most of the symbols used. In some cases, where no symbol has been assigned to a library, one will be devised according to the principles of the Union List.

Library symbols used in this issue may be found in the following list:

DA:	U. S. Dept. of Agriculture Library, Washington, D. C.
DGS:	U. S. Geological Survey Library, Washington, D. C.
DLC:	Library of Congress, Washington, D. C.
DSG:	U. S. Army Medical Library, Washington, D. C.
DWB:	U. S. Weather Bureau Library, Washington, D. C.
MH-BH:	Harvard University, Blue Hill Observatory (and American Meteorological Society) Library, Milton, Mass.
NBG:	Brooklyn Botanic Garden, Brooklyn, N. Y.
NN:	New York Public Library, New York, N. Y.
NNA:	American Geographic Society Library, New York, N. Y.
NNC:	Columbia University Library, New York, N. Y.
NNJ:	Jewish Theological Seminary Library, New York, N. Y.
NNM:	American Museum of Natural History Library, New York, N. Y.
NNZ:	Zionist Archives and Library, New York, N. Y.

Other symbols:

*	before an entry indicates a good data source.
†	before an entry indicats a good bibliography.
§	before an entry indicates a synoptic case history study accompanied by charts.

Geographic locations are in the English form rather than the form used locally, for example, Moscow for Moskva.

Titles of articles or monographs are in the language of the original article unless otherwise stated. Slavic (Cyrillic) titles are transliterated into the Roman alphabet according to the Library of Congress transliteration scheme.

Abbreviations:

Titles of periodicals are not abbreviated, as a rule.

The months of the year from March to July are not abbreviated. Other months are abbreviated as Jan., Feb., Aug., Sept., Oct., Nov., and Dec.

The word or abbreviation for Volume (Tom, Band, Jahrgang, Año, etc.), for Number (Heft, Fascicule, Vypusk, etc.) and for page or pages is omitted from most entries. Thus an entry will read as follows:

Meteorologische Rundschau, 2(5–6):146–151, May–June 1950.

This indicates that the article appeared in *Meteorologische Rundschau*, *Jahrgang* 2 (Vol. 2), *Heft* 5–6 (No. 5 and 6), *pages* 146–151, May–June 1950.

PART I. ABSTRACTS OF CURRENT METEOROLOGICAL MATERIAL

GENERAL METEOROLOGY

2.5–1 551.5 551.584.4(02)

Latimer, Wendell M., **General meteorological principles.** (In **Handbook on aerosols.** Washington, D. C., U. S. Office of Scientific Research and Development, National Defense Research Committee, **1950.** p. 15–39. 27 figs., 5 tables, refs. p. 144, 26 equations.) **DWB**—Discusses general principles of stability of dry and moist air, temperature near ground (2.5–30 cm.) including effect of radiation and ground temperatures in relation to albedo and conductivity of various surfaces. Convection, turbulence and gustiness are defined and correlated with temperature gradient up to 6 m. Gravity winds and land and sea breezes are referred to and the effect of air mass characteristics illustrated. Finally, series of micrometeorological records of temperature and wind are graphed and discussed, including effects in wooded areas and jungle. A useful summary. *Subject Headings:* **General meteorology, Micrometeorology, Handbooks.**—*C.E.P.B.*

2.5–2 551.5(09)

Gates, W. Lawrence, **A history of meteorology with emphasis upon development prior to the twentieth century.** Term paper—Harvard University. Jan. **1950.** 62 typewritten leaves. 23 refs. plus numerous citations in text. **MH-BH**—A clear and fairly competent review of the development of instrumental, observational and synoptic meteorology from the dawn of history to the end of the nineteenth century, based on a score of well known sources (all but 3 in English, or translations into English). However, there are many useful citations in the text of Latin, Italian, German and French works which were taken from the more comprehensive works referred to in the bibliography. *Subject Headings:* **General meteorology, History.**—*M.R.*

2.5–3 551.5:06

Atti del Primo Convegno Internazionale di Meteorologia Alpina. Rendiconti delle sedute. [Proceedings of the First International Meeting on Alpine Meteorology. Proceedings of the sessions.] *Geofisica Pura e Applicata,* 17(3–4):81–87, Oct.–Dec. **1950.** ref. **MH-BH**—An account of the organization of the Alpine Meteorology Conference which took place at Milan on Sept. 20 and 21, 1950 and at Turin on Sept. 22 and 23, 1950. At the latter place the meeting was in connection with one of the Italian Glaciological Committee's, and an excursion to the Valle d'Aosta was arranged on Sept. 23. The names of those who were present and those who could not attend, the minutes of the session and a brief history of Alpine meteorological research are included. *Subject Headings:* **Alpine Meteorology Conference, Mountain meteorology.**—*M.R.*

2.5–4 551.5:06

Rapport final abrégé, Commission de Bibliographie et de Publications, 2me session, à Toronto, Canada, septembre 1947. [Final abridged report of the Commission on Bibliography and Publications, 2nd session, Toronto, September, 1947.] *Organisation Météorologique Internationale, Publication* No. 61, **1949.** 33 p. 1 plate. In French and English. **DWB**—The second session of the Commission on Bibliography and Publications passed 17 resolutions. The Commission stressed the need for the international exchange of publications and information. This exchange had deteriorated during the war, consequently, they recommended that it be resumed and extended to include war time work that could be released. Revisions and additions to section 551.5 (meteorology) of the Universal Decimal Classification were

submitted to the International Federation for Documentation for adoption. It was recommended that Réseau Mondial and World Weather Records be continued; that official articles have at least a summary in English or French; that a "Bibliographie Signalétique," a "Bibliographie Analytique," a Hydrologic bibliography and glossary, and an International Journal of Meteorology be established or promoted. (Resolutions are in French and English, the rest in French.) Members of the Commission and a photograph of those attending at Toronto are given. *Subject Headings:* **I.M.O. Publications, Toronto Conference of 1947, Bibliography and Publications Commission—I.M.O.**—*G.C.B.*

2.5–5 551.5:016(68)

Venter, R. J. (comp.), **Bibliografie van meteorologiese streekliteratuur. Vol. 1, Suidelike Afrika 1486–1948.** Added title: **Bibliography of regional meteorological literature. Vol. 1, Southern Africa 1486–1948.** Pretoria, Union of South Africa, Weather Bureau, **1950.** Price 21 s. 412 p. **MH-BH**—An excellently prepared, edited and bound volume containing 2900 references to articles or books on meteorology or climate of South Africa including Angola, British East Africa, Zanzibar, Tanganyika, Mozambique, Southwest Africa, northern Rhodesia, Nyasaland, Madagascar, Mauritius, the South Atlantic and the western Indian Ocean arranged according to the Universal Decimal Classification. A classified index by the above regions, an author index, an outline of the U.D.C. scheme for meteorology in English and Afrikaans, and a tabulation of observational data available for each of these regions by type of data and chronological period, make this a most valuable reference. *Subject Headings:* **Climatological data, Bibliographies, South Africa, East Africa, Indian Ocean.**—*M.R.*

2.5–6 551.5:37

Zharkov, Sergeĭ Nikolaevich, **Meteorologiia v sredneĭ shkole.** [Meteorology in high school.] Moscow, Izdat. Akademii Pedagogicheskikh Nauk, RSFSR, **1948.** 111 p. 37 figs., tables, 10 refs., equations. **DLC**—A short text for use in teachers colleges of the USSR. The first chapter takes up the importance of meteorology in the life and activity of man, this is followed by a discussion of teaching of meteorology in high schools; meteorology in courses of natural science, geography and in physics; organization of meteorological observations; amateur observations (without instruments); instrumental observations and, finally, a 7-page annotated bibliography giving the best general, theoretical and practical works which are written in (or have been translated into) Russian. *Subject Headings:* **Teaching of meteorology, U.S.S.R.**—*M.R.*

2.5–7 551.5:576

Wodzicki, Kazimierz and Hamilton, W. M., **Influence of season on human fertility.** Sixth Pacific Science Congress 1947, Proceedings. *Royal Society of New Zealand, Transactions,* 77(5):394–398, Nov. **1949.** 4 figs., table. **DLC**—Number of births in Auckland and Otago-Southland in each month compared with temperature (correlations +.37 and +.69) and duration of daylight (r with lag of one month, +.38, +64). *Subject Headings:* **General meteorology, Human fertility.**—*C.E.P.B.*

2.5–8 551.5:6

Chang, P. C. (comp.), **Meteorology and national reconstruction.** *Meteorological Magazine, Nanking,* 19(1–4):82–93, Aug. **1947.** In Chinese. **MH-BH**—*Subject Heading:* **Applied meteorology.**

2.5–9 551.5:6

Lorente Peréz, José María, **El gran campo de aplicación de la meteorologia.** [The great field of application of meteorology.] *Revista de Geofísica,* Madrid, 9(35):248–261, July–Sept. **1950.** ref. **DWB**—A discussion of the applications of meteorology to human affairs. A long list of problems is given, from mental and physical influence on man through effect on soil, plants, animals, building and air conditioning, town planning, transportation, tourism, sport, many forms of industry, to war. *Subject Heading:* **Applied meteorology.**—*C.E.P.B.*

2.5–10 551.5:63

Bac, Stanislaw, **Meteorologia a melioracje rolnicze.** [Meteorology and agricultural economy.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, No. 1:44–47, April **1948.** English summary p. 4. **MH-BH**—General article on importance of meteorology in agricultural research. *Subject Heading:* **Agricultural meteorology.**—*C.E.P.B.*

2.5–11 551.5:72

Lee, Douglas H. K., **Thoughts on housing for the humid tropics.** *Geographical Review*, 41(1):124–147, Jan. **1951.** 2 figs., 24 photos, table, 16 refs. **DWB**—A discussion of the structural and design requirements of housing in tropical climates for the purpose of ameliorating the environmental heat stress upon human beings. The following features are considered: the design, structural material and insulation of the roof so as to reduce the load of solar radiation; the construction of walls and interior layout to facilitate natural ventilation and the suitability of air conditioning. Housing programs and types of housing being built in Nigeria, Australia and Puerto Rico are described. The article contains photographs of various types of humid tropical housing and graphs showing the maximum intensity of solar radiation falling upon horizontal roof and walls at different hours of the day. *Subject Headings:* **Applied meteorology, Architecture, Tropical housing.**—*I.L.D.*

2.5–12 551.5:92

Hoffmeister, J., **Nachruf auf Carl Kassner.** [Obituary of Carl Kassner.] *Zeitschrift für Meteorologie*, 4(7–8):194, July–Aug. **1950. MH-BH**—Born Nov. 1, 1864, died June 10, 1950. Author of about 300 works, mainly climatological. *Subject Headings:* **General meteorology, Biography, Carl Kassner.**

2.5–13 551.5:92

König, W., **Nachruf auf Professor Dr. Reinhard Süring.** [Obituary of Prof. Dr. Reinhard Süring.] *Zeitschrift für Meteorologie*, 5(2):33–34, Feb. **1951. DWB**—Born May 15, 1866, died Dec. 29, 1950. Edited *Meteorologische Zeitschrift* from 1908 and new editions of HANN'S **Lehrbuch der Meteorologie** from 1915. *Subject Headings:* **General meteorology, Biography, Reinhard Süring.**—*C.E.P.B.*

2.5–14 551.5:92(09)

Rasey, L. B., **Our heritage.** *U. S. Weather Bureau, Forecasters' Forum*, 2(11):2–3, Nov. **1950. DWB**—A brief review of several papers by ERIC MILLER on American pioneers in meteorology (LOOMIS, REDFIELD, ESPY and FERREL). These papers appeared in the *Monthly Weather Review* during the early 1930's. *Subject Headings:* **General meteorology, Biography, History.**—*M.R.*

METEOROLOGICAL OBSERVATIONS AND INSTRUMENTS

METHODS OF OBSERVATION

2.5–15 551.501:551.582

Vanni, Manfredo, **Proposte per lo sviluppo della rete meteorologica nelle Alpi Occidentali.** [Proposal for developing the meteorological network of the Western Alps.] *Geofisica Pura e Applicata*, 17(3–4):234–237, Oct.–Dec. **1950.** English summary p. 234. **MH-BH**—Suggestions for a rational plan of establishing high mountain observatories in the Italian and French Alps, with due consideration for regional climatic differences. Five regions are defined and the important factors to be observed in each outlined. Several stations which were abandoned during the war are recommended for reestablishment; especially those of Col d'Alen (10,000 ft.) and Margherita (15,000 ft.) on Monte Rosa. *Subject Headings:* **Mountain meteorology, Meteorological observatories, Western Alps, Monte Rosa, Italy.**—*M.R.*

2.5–16 551.501.4

Kohler, Max A., **On the use of double-mass analysis for testing the consistency of meteorological records and for making required adjustments.** *American Meteorological Society,*

Bulletin, 30(5):188–189, May **1949.** 2 figs. **MH-BH**—Double-mass analysis of two variables X and Y is plotting accumulated values of X against those of Y. Breaks in either record show up as changes of slope of the best fitting line. The faulty record can be found by plotting against average of a group of neighboring stations and adjustment factors determined. If relation is not linear, differences from a smooth curve can be used (e.g., stream flow-precipitation). *Subject Heading:* **Methods of computation.**—*C.E.P.B.*

2.5–17 551.501.4:519.2

Panofsky, H. A., **Significance of meteorological correlation coefficients.** *American Meteorological Society, Bulletin*, 30(9):326–327, Nov. **1949. MH-BH**—Brief contribution to the problem of linear correlation coefficient with application to the problem of the relation between two meteorological variables. *Subject Headings:* **Meteorological statistics, Correlation coefficients.**

2.5–18 551.501.45:629.13

Douglas, R. H. **A graphical aid to the selection of best-time tracks.** *American Meteorological Society, Bulletin*, 30(7):248–250, Sept. **1949.** 3 figs., 3 equations. **MH-BH**—Describes a nomogram type of graph for finding flying time *Te* over any alternative track (length *Re*) to great circle track *Rd*, given mean wind speeds along this track and great circle, *We* and *Wd*. Diagram gives curve families for *Re–Rd*, ground speed *G* and air speed scales for *Rd*, (*We–Wd*) and *Wd*. *Subject Headings:* **Aeronautical meteorology, Nomograms.**—*C.E.P.B.*

2.5–19 551.501.6:551.571

Ness, Wilhelm, **Eine Netztafel für die Beziehung zwischen Temperatur, relativer Feuchte und Taupunkt.** [A grid chart for the relation between temperature, relative humidity and dew point.] *Meteorologische Rundschau*, 3(11–12):247–248, Nov.–Dec. **1950.** 5 figs. **DWB, MH-BH**—Author first sets out forms of diagrams representing $p \pm q \pm r = h$ or 0 by three sets of lines crossing at 60°. With logarithmic scales these become p.q.r. = c. A diagram is constructed for the expression $f.p(t).1/p(\tau) = 1$ for relative humidity, temperature and dew point. Other uses of this diagram form are briefly indicated. *Subject Headings:* **Nomograms, Humidity diagrams.**—*C.E.P.B.*

2.5–20 551.501.9(411)

Crichton, J., **Eskdalemuir Observatory.** *Meteorological Magazine, London*, 79(942):337–340, Dec. **1950.** 2 photos. **MH-BH**—Opened 1908 in an isolated position in Dumfriesshire for terrestrial magnetism, meteorology, atmospheric electricity and seismology (the last transferred to Kew in 1925). *Subject Headings:* **Meteorological observatories, Scotland.**

2.5–21 551.501.9:06(81)

Escobar Vallejo, Ismáel, **Anteproyecto de una oficina meteorológica para el Instituto Internacional de la Hilea Amazónica.** [Tentative proposal for a meteorological service for the International Institute of the Hylean Amazon.] *Revista Meteorológica*, 9(33):55–65, April **1950.** figs. **MH-BH**—A plan presented to *I.M.O.* Region III and to *UNESCO* for a meteorological service to conduct research and give actual service to the Hylean Amazon project. Several interested countries would cooperate by furnishing personnel and data. The functions of the proposed sections on climatology, agricultural meteorology, medical meteorology, hydrometeorology, synoptic and aeronautical meteorology are outlined in detail. Personnel to be contributed by the 10 countries involved is enumerated and discussed. An organization chart and list of major projects are presented. *Subject Headings:* **Meteorological services, International organizations, Amazon Basin.**—*M.R.*

2.5–22 551.501.9:55(84)

Escobar Vallejo, Ismáel, **Anteproyecto para el observatorio de física cósmica en Chacaltaya.** [Proposal for a cosmic physics observatory at Chacaltaya.] *Nimbus*, 2(5):3–23, Jan.–March **1950.** 15 figs. **MH-BH**—A meteorological observatory was established at Chacaltaya (5280 M.S.L.) in Oct. 1942 at the Bolivian Andes Club Cabin, for synoptic and airways observations. Average and extreme temperature, humidity and cloud data for 1942–

1948 are shown graphically. A new proposal is elaborated for a geophysical observatory at Chacaltaya, to make comprehensive meteorological, solar radiation, atmospheric electricity and cosmic ray observations. Considerable information about spatial variations in geophysical elements, problems for research, and administrative particulars are given. *Subject Headings:* **Geophysical observatories, High altitude observatories, Chacaltaya, Bolivia.**—*M.R.*

2.5–23 551.501.9:06(44)(09)

Grisollet, H., **Histoire administrative et scientifique du service d'études et de statistique climatiques de la ville de Paris, et des observatoires de Montsouris et de la Tour Saint-Jacques.** [Administrative and scientific history of research and climatic statistics service of Paris and the observatories of Montsouris and Tour Saint-Jacques.] *La Météorologie*, 4th Ser., No. 19:129–142, July–Sept. **1950.** photo. French, English and Spanish summaries p. 129. **DWB**—A detailed account of the history of the meteorological observatories and organizations which served Paris from the earliest days up to the present. The Observatoire de la Tour Saint-Jacques and Observatoire de Montsouris are the two most important points where records were made in the early days. *Subject Headings:* **Meteorological services, History, Paris.**—*M.R.*

2.5–24 551.501.9(438)

Hohendorf, Eugeniusz, **Sto lat istnienia Stacji Meteorologicznej w Bydgoszczy.** [A century of observations made at the meteorological station in Bydgoszcz.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, No. 1:89–93, April **1948.** English summary p. 5. **DWB**—*Subject Headings:* **Meteorological observations, History, Poland.**

OBSERVATIONAL DATA

2.5–25 551.506.1(46)

*Alvarez Castrillon, M., **Resumen de las observaciones meteorológicas corespondientes al año 1947.** [Summary of meteorological observations for the year 1947.] *Barcelona, Real Academia de Ciencias y Artes, Sección Meteorológica y Sísmica del Observatorio Fabra, Bulletin*, No. 36:1–51, **1949.** all tables. **MH-BH**—An annual summary including monthly and annual means and extremes or frequencies of various meteorological elements. Detailed four-hourly values and ten-day means, diurnal variations and variations from long period means are given for several of the elements. Daily values of minimum temperature at the ground and at .7 m are included. *Subject Headings:* **Observational data, Spain.**—*R.S.Q.*

2.5–26 551.506.1(6)

British East Africa, Meteorological Dept., **Summaries of meteorological observations at selected stations in East Africa for 1949.** Nairobi, [**1950.**] 88 p. all tables. **DLC**—

Pt.	I—Kenya	(30 sta.)	30 p.
	II—Tanganyika	(32 sta.)	32 p.
	III—Uganda	(19 sta.)	19 p.
	IV—Zanzibar	(5 sta.)	5 p.
	V—Seychelles—1948–1949		2 p.

Monthly and annual summaries of all the standard meteorological elements for 1949. Cloudiness and visibility in various groups for 0630 and 1430. *Subject Headings:* **Observational data, East Africa, Seychelles.**—*M.R.*

INSTRUMENTS

2.5–27 551.507.321:551.501.7

Murray, W. D., Schneider, C. S. and Smith, J. R., **Development and utilization of constant-level balloons.** *American Geophysical Union, Transactions*, 31(6):843–848, Dec. **1950.** 5 figs., table, 4 refs. **DWB**—The properties of plastic nonextensible balloons, which can be kept at constant levels in the tropopause and low atmosphere for long periods of time (some have remained afloat for more than 50 hours while carrying a full load for over 6000 miles), are discussed. The loss of lift is compensated for by the control of ballast flow which is controlled

by an aneroid unit set to permit flow whenever the balloon system descends to a prescribed pressure level. The mechanical control unit is described and a diagram ballast control circuit is given. The use of such balloons in determining air trajectories and as a vehicle for carrying instruments to a desired level is discussed. A table giving data on the relationship between load and altitude for various balloon sizes and an example of a 200 mb. trajectory study are presented. *Subject Headings:* **Constant level balloons, Observation techniques.**—*I. L. D.*

2.5–28 551.508:551.5

†Brewer, W. A. and Scrase, F. J., **Reviews of modern meteorology. I. Meteorological measurements.** *Royal Meteorological Society, Quarterly Journal*, 77(331):3–32, Jan. 1951. 2 figs., 62 refs. **MH-BH**—The introduction points out that in meteorological instruments simplicity is generally more important than very great accuracy. Under "Developments in routine meteorological instruments" the latest tendencies are discussed in: barometers (to 0.1 mb.), anemometers, visibility meters, measurement of upper wind (optical and radio-theodolites, radar), radiosondes and high altitude balloons (their errors and the accuracy desirable, wind 1 kt., temperature 0.25–0.5°C., relative humidity 1–2 fifths of true value; a hypsometer is suggested instead of an aneroid for low pressures), special instruments for use on aircraft and for thunderstorm location. Authors then discuss technique of measurements in meteorological research: radiation of all wave lengths, ozone, infrared absorption and the various methods of measuring the properties of the atmosphere at very high levels (sound probes, meteor studies, rockets, etc.), composition (direct measurement, spectra), cloud drop size (direct measurement, photography, radar), condensation and freezing nuclei (the latest counts of freezing nuclei in city air are illustrated) and instrumental measurements of atmospheric turbulence. This article is the first of a new series. *Subject Headings:* **Meteorological instruments, Observation techniques.**

2.5–29 551.508.23:551.521.11(73)(4)

*Gorczyński, Wladyslaw, **Porównanie czasu trwania usłonecznienia dla heliografów używanych w Ameryce i w Europie.** [Comparison and interconversion of sunshine duration in North America and Europe.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, No. 2–4:21–38, Dec. 1948. 3 figs., 2 tables, 14 refs. English summary p. 36–37. **DWB**—A more detailed treatment of the subject comprised in two other articles by the author (*see item* No. 1–46 in Jan. 1950 and No. 4–17 in April 1950, *Meteorological Abstracts*). Records of total hours of sunshine obtained by the U. S. Weather Bureau and the Campbell-Stokes recorder at various places are compared and charts drawn for America and Europe to show hours of bright or visible sun in winter, summer and for the year. Corrections for each type of recorder are discussed at length. *Subject Headings:* **Sunshine recorders, Sunshine duration, North America, Europe.**—*M. R.*

2.5–30 551.508.29

Anderson, L. J., **Compensation method for thermistor beads.** *American Meteorological Society, Bulletin*, 30(5):192–193, May 1949. fig., 2 tables, 4 equations. **MH-BH**—Western Electric thermistor beads, satisfactory for electrical measurements of air temperature, and a method of calibration are described. *Subject Heading:* **Thermistors.**

2.5–31 551.508.29

Latimer, Wendell M., **Micrometeorological instruments.** (In **Handbook on aerosols.** Washington, D. C., U. S. Office of Scientific Research and Development, National Defense Research Committee, 1950. p. 40–59. 29 figs., 5 refs. p. 144.) **DWB**—Gives photos and working diagrams of instruments for measuring small wind speeds and temperature differences—anemometers (magnetic cup, mercury cup, British cup, hot wire) and direction vanes. Temperature aspirated thermo-couples on mast, recording resistance thermometers, gustiness vanes, smoke puffer for estimating speed and direction in jungle, photocell illumination recorder and recording apparatus for wind direction. *Subject Headings:* **Anemometers, Wind recorders.**—*C. E. P. B.*

2.5–32 551.508.54

Gutmann, J., **Zur Frage der Stärketeilung an den Feldwindfahnen.** [On the question of the graduation of hand anemometers.] *Wetter und Leben*, 3(1–2):22–23, Jan. **1951.** fig. **MH-BH**—The hand anemometer used in the Austrian Army in 1914–18 was graduated for force from 1–7 These corresponded to Beaufort 1–4. The figure gives also conversion to m./sec. *Subject Heading:* **Anemometers.**—*C.E.P.B.*

2.5–33 551.508.822:551.508.94

Kreielsheimer, K., **A radio-sonde method for potential-gradient measurements in the atmosphere.** Sixth Pacific Science Congress 1947, Proceedings. *Royal Society of New Zealand, Transactions*, 77(5):91–98, Nov. **1949.** 6 figs., 10 refs. **DLC**—The U. S. Bureau of Standards radio meteorograph was modified so that the potential gradient causes a current through a grid leak and so modifies the modulation frequency perceived by the unaltered receiving equipment. Calibration is described and an example of a record in a thundercloud illustrated and explained. It shows a negative charge at base, strong positive at 10,000 ft. and strong negative at 14,000 ft. *Subject Headings:* **Radiosondes, Potential gradient measurements.**—*C.E.P.B.*

2.5–34 551.508.822

Venkiteshwaran, S. P., **The calibration equipment for the F-type radiosonde.** *India, Meteorological Dept., Scientific Notes*, 11(134):21–38, **1950.** 11 plates, tables. **DWB**—The details and performance of the calibration equipment and the calibration of the *F*-type radiosonde used in India are discussed and well illustrated by means of diagrams and photographs. A comparison is made of the efficiency and cost of two types of calibration equipment –one a modification of the meteorograph calibration chamber using liquid CO_2 as a refrigerant and the other a deep freeze chamber with special attachments. The first method is cheaper and more adaptable for outlying or small stations, but cannot calibrate lower than −40°C. The latter equipment is expensive as it is imported from the United States but allows calibration to −80°C. and is less costly (though more difficult) to operate. It is recommended for control offices. *Subject Heading:* **Radiosonde calibration.**—*M.R.*

SYNOPTIC ANALYSIS AND FORECASTING

2.5–35 551.509.31

Gabites, J. F., **Weather forecasting today.** Sixth Pacific Science Congress 1947, Proceedings. *Royal Society of New Zealand, Transactions*, 77(5):60–65, Nov. **1949.** 2 figs. **DLC**—A summary of advances in forecasting during the war, especially in the tropics. Deals with the improved collection of observations, diagnosis including full use of upper air data to construct contour charts, and prognosis. The importance of vertical motion, convergence and divergence is emphasized, but there has been little progress in technique. *Subject Heading:* **Weather forecasting.**—*C.E.P.B.*

2.5–36 551.509.31(438)

Kluźniak, Sylwia, **Z działalności referatu synoptyczhego Wydziału Morskiego PIHM w Gdyni,** [About the activity of the forecasting section of the Maritime Observatory in the Baltic harbor of Gdynia.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, No. 1:77–83, April **1948.** English summary p. 5. **MH-BH**—Describes synoptic maps issued daily at Gdynia for services in Gulf of Danzig. Includes Polish terms for weather symbols, fronts, etc. *Subject Headings:* **Marine forecasting, Synoptic analysis, Poland.**—*C.E.P.B.*

2.5–37 551.509.3:551.575

George, J. J., **On the technique of forecasting low ceilings and fogs.** Atlanta, Eastern Air Lines, Meteorological Dept., Jan. 31, **1941.** 13 leaves. 6 figs., 2 tables. Mimeographed. **DWB**—Notes on the general concepts of fog classification, occurrence and forecasting based on synoptic charts and nomograms (the latter for determining time of formation based on experience at a given place). Fog formation for 20 places in the eastern U.S.A. was studied and

charts presented to show type of fog and season of occurrence. An analysis of the causes of forecast errors shows that 70% of such errors could be avoided by careful study of cause of error. *Subject Headings:* **Fog forecasting, Objective forecasting, Forecast verification.**—*M.R.*

2.5–38 551.509.31:551.575(481)

*§Spinnangr, Gunnar, **Fog and fog forecasting in northern Norway.** *Meteorologiske Annaler*, 3(4):75–136, **1950.** 24 figs., 8 tables, 6 refs. **DWB**—Northern Norway has been divided into 17 districts (7 coastal, 5 fjord and 5 inland) with nearly equal probability of fog occurrence. Data for 1935–1939 was analyzed for all of the meteorological stations in these districts and seasonal or monthly frequencies presented for each of the various types of fog. Air trajectories, sea temperatures and synoptic situations are analyzed for specific periods during which maritime air, continental air, radiation, frontal and Arctic Sea smoke fog prevailed. The period 1935–39 was used because during that period observers were especially trained in cloud, visibility and weather observations. *Subject Headings:* **Fog forecasting, Fog frequencies, Norway.**—*M.R.*

2.5–39 551.509.312:551.577.37/38(51)

Tu, Chang-wang and Niu, Tien-jen, **Summer flood and drought in the lower Yangtze Valley.** *Chinese Geophysical Society, Journal*, Nanking, 2(1):27–39, June **1950.** 6 figs., table, 5 refs. In English, Chinese summary p. 27. **DWB**—The relationship between the centers of action in the Far East and the summer flood of 1931 and summer drought of 1934 were investigated by comparing the pressure charts of 1931 and 1934 with normal mean monthly and 5-day pressure charts for almost the entire Eurasian continent, the Pacific Ocean, the Indian Ocean, the Arctic seas and part of the Atlantic Ocean. On the basis of synoptic analysis, it was concluded that the flood of June 1931 was caused by numerous stationary cyclones whose passage to the sea was blocked by a strong high pressure in the Sea of Japan, and that the drought of 1934 was caused by the unusual development of the Pacific High and the westward extension of its wedge into eastern China, particularly in April, May and June. Furthermore, the relationship between the movement of the rainfall regions in summers of 1931 and 1934 and the pressure systems in the 5-day mean pressure chart indicated that the summer rainfall of south and central China was controlled mainly by the east extension of the Indian low pressure trough or northward migration of the trough of southern Asia, while the major cold front produced the summer rainfall of southern China. Two reliable indices were found for the summer monsoon and their relationship to monsoon rainfall. *Subject Headings:* **Flood forecasting, Drought forecasting, Yangtze Valley, China.**—*I.L.D.*

2.5–40 551.509.319:551.513

Grytøyr, Elias, **A method of selecting analogous synoptic situations, and the use of past synoptic situations in forecasting for East-Norway.** *Geofysiske Publikasjoner*, 17(9), **1950.** 28 p. 10 figs., 36 fold. plates, tables. **DWB**—A well developed scheme is presented for classification of synoptic charts from the point of view of the relation of neighboring frontal and weather conditions or types to a single station or area. Applications to analysis and analogue forecasting for Oslo are provided as a test of the method, and the results of statistical verification of two test cases against official forecasts are presented in detail. The system is based on about 50,000 analyzed synoptic charts (1920–1940) and the classification of each day during that period is given by months in large fold-in charts in the back of the publication. *Subject Headings:* **Analogue forecasting, Synoptic analysis, Weather forecasting, Norway.**—*M.R.*

2.5–41 551.509.33:633.1:551.588.1(52)

†Hanzawa, Masao, **Oceanographical considerations in the bad rice crop in the Tohoku District of Japan (synthetic review).** *Oceanographical Magazine*, Tokyo, 1(4):194–203, Dec. **1949.** 2 figs., 23 refs. In English. **MH-BH**—The Tohoku District in northern Honshu is the chief agricultural area of Japan, but is so near the northern edge of possible rice growth that bad years (Kyōsaku) occur very often as a result of cool summers (Kyorēi). Attempts have been made since 1908 to forecast these cool summers in advance, on the basis of oceanographic or meteorological factors (periodicity, solar radiation, ocean temperatures, ice from Bering Sea, etc.). Bad years of 1902, 1905, 1913, 1931 and 1934 are analyzed and conclusion

is that dust from volcanic eruptions is cause. *Subject Headings:* **Long range forecasting, Agronomy, Marine influences, Volcanic dust, Japan.**—*M.R.*

2.5–42 551.509.34

Masse, L., **La prévision locale du temps.** [Local weather forecast (Pt. I).] *La Météorologie*, 4th Ser., No. 19:171–181, July–Sept. **1950.** fig. French, English and Spanish summaries p. 171. **DWB**—A number of simple but scientific rules are given whereby a sailor or a landlubber could forecast the local weather from observations of pressure, wind, clouds, temperature and humidity under cyclonic or inter-cyclonic conditions. The program of observations and methods of "single station" forecasting (without charts) is elaborated in the second part of this paper. *Subject Headings:* **Amateur forecasting, Single-station forecasting.** —*M.R.*

2.5–43 551.509.5

Schaffer, W., **A rational method of delimiting forecast areas.** *American Meteorological Society, Bulletin*, 30(6):224–228, June **1949.** 3 figs., table, equations. **MH-BH**—If $Q=\frac{1}{2}(R/r+D/d)$ where r is number of raindays at central station and R at both central and secondary station, d, D numbers of dry days then chance value of $Q=\frac{1}{2}$. Chart of Q given for part of South Africa with Bloemfontein as central station. Division into forecast areas based on $Q=.75$ adjusted to convenient boundaries. *Subject Heading:* **Forecasting areas.**—*C.E.P.B.*

2.5–44 551.509.5:517.512.2

Smagorinsky, Margaret and Brier, Glenn W., **Verification of temperature predictions based on an alleged periodicity in solar radiation.** *American Meteorological Society, Bulletin*, 30(7):256–257, Sept. **1949.** 2 tables, 3 refs. **MH-BH**—C. G. Abbot's predictions of dates of minimum temperature at Washington are not confirmed and correlograms show no trace of a periodicity of 6–7 days. *Subject Heading:* **Forecast verification.**

STRUCTURE AND PHYSICS OF THE ATMOSPHERE

STRUCTURE OF THE ATMOSPHERE

2.5–45 551.510.42 551.591:551.509.33

Lamb, H. H., **Smoke sources and visibility forecasting in Great Britain and Ireland.** *Eire, Dept. of Industry and Commerce, Meteorological Service, Geophysical Publications*, 3(2), **1950.** 2 p. fig. **DWB**—According to the author, domestic fires are the main source of smoke, far exceeding industrial sources. Complications arise from two or three smoke sources affecting one place at the same time. Time of day, season, meteorological conditions and localities most affected around Dublin are discussed briefly. A large chart shows major pollution. *Subject Headings:* **Atmospheric pollution, Visibility forecasting, Dublin, British Isles.**—*M.R.*

2.5–46 550.510.42:551.551

Rodebush, W. H., **Travel and persistence of aerosol clouds.** (In **Handbook on aerosols.** Washington, D. C., U. S. Office of Scientific Research and Development, National Defense Research Committee, **1950.** p. 137–142. 5 figs., 8 refs. p. 147.) **DWB**—A smoke cloud rises at first because of higher temperature. Meteorological factors in laying smoke screens are summarized, also thermal stability and effect of land-sea barrier, convective pattern in unstable air and convective ceiling. *Subject Headings:* **Smoke clouds, Atmospheric pollution.**—*C.E.P.B.*

2.5–47 551.510.42(04)

Sutton, O. G., **United States Technical Conference on Air Pollution.** *Meteorological Magazine, London*, 79(941):324–326, Nov. **1950.** **MH-BH**—Brief summaries of addresses to the Panel of Meteorology at a Conference in Washington, May 1950, by E. W. Hewson, K. L. Calder, O. G. Sutton, W. F. Davidson, H. Neuberger, P. E. Church, J. Z. Holland.

A film of smoke trails was shown by M. E. Smith. *Subject Headings:* **Atmospheric pollution, Addresses.**

2.5–48 551.510.42 551.508.91

U. S. Office of Scientific Research and Development. National Defense Research Committee. **Handbook on aerosols.** Washington, D. C., U. S. Atomic Energy Commission, **1950.** 147 p. figs., tables, refs., equations, biblio. p. 143–147. **DWB**—A series of 11 papers on properties and disposal of small particles in gases. Those of meteorological interest are abstracted separately. *Subject Heading:* **Aerosols.**

2.5–49 551.510.5

Bates, D. R., **Basic properties of the upper atmosphere.** *Weather*, 5(12):420–423, Dec. **1950.** table, ref. **DWB**—Sets out briefly evidence for chemical composition (ozone, free sodium atoms), temperature and density 0–120 km. and estimates variations of these above 120 km. *Subject Headings:* **Atmospheric structure, Atmospheric composition.**

2.5–50 551.510.5:523.7

Woodward, R. H., **A tentative model of the sun.** *Journal of Geophysical Research*, 54(4):387–396, Dec. **1949.** 30 refs. Abstract p. 387. **DWB**—A theory of the circulation of ions in the earth's electric field is used as an analogy for the solar electric field. Sunspots, chromosphere, prominences and flocculi and corona are briefly described with references to the ionosphere, solar radio noise and cosmic rays. *Subject Headings:* **Atmospheric structure, Sunspots.**—*C.E.P.B.*

2.5–51 551.510.52:621.396.11

Booker, H. G. and Gordon, W. E., **Outline of a theory of radio scattering in the troposphere.** *Journal of Geophysical Research*, 55(3):241–246, Sept. **1950.** 2 figs., 7 refs., 9 equations. **DWB**—Observations in Caribbean Sea and elsewhere showed that field strength well below the horizon decreased more slowly than on diffraction theory and suffered violent fading. This is explained by scattering from turbulence in the region of high field strength beyond the horizon. *Subject Headings:* **Radio transmission ducts, Radio scattering.**—*C.E.P.B.*

2.5–52 551.510.52:621.396

Milnes, B. and Unwin, R. S., **A radio meteorological investigation in the South Island of New Zealand.** *Physical Society of London, Proceedings, B*, 63, Pt. 8(368B):595–616, Aug. 1, **1950.** 26 figs., 9 refs. **DWB**—When föhn winds blow out over the sea in the vicinity of Canterbury Bight (South Island, New Zealand) they have a temperature of 12 to 20° or even 30°F. higher than the sea surface temperature and a corresponding deficit in humidity. The resulting inversion has a pronounced effect on radio transmission, as shown by these studies. Both the meteorological factors and the transmission measurements (refractive index) are carefully analyzed and shown in diagrams and cross sections, including a synoptic chart for Aug. 5, 1947. Lapse rate and field strength contour charts are given for other specific periods. *Subject Headings:* **Radio transmission ducts, Super-refraction, New Zealand.**—*M.R.*

2.5–53 551.510.53:550.386

Bartels, Julius, **Results of geomagnetic K-indices for the International Polar Year 1932–33.** *Journal of Geophysical Research*, 55(4):427–435, Dec. **1950.** 4 tables, 15 refs. **DWB**—On the basis of geomagnetic K indices for 44 stations for the Polar Year 1932–33, planetary indices Kp, for sudden commencements and for solar flame effects, are derived. The geomagnetic planetary three-hour range indices Kp and frequencies of Kp indices for 13 months of 1932–33 and for typical months in other years are presented in tables. The Polar Year 1932–33 was typical for geomagnetic conditions in the year preceding a sun-spot minimum. The relationship between diurnal variation of geomagnetic activity (SA) and solar diurnal disturbance indicates that during maximum geomagnetic activity a station is in or near the terrestrial target-sector of solar-particle radiation. An essential difference between European and North American variations of geomagnetic activity near the auroral zone is indicated. Geomagnetic

activity is characterized by a rarity of intervals for the whole earth. *Subject Headings:* **Upper atmosphere, Magnetic disturbances.**—*I.L.D.*

2.5–54 551.510.53

Gumiński, Romuald, **Niektóre zagadnienia stratosfery.** [Problems of the stratosphere.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, No. 2–4:11–20, Dec. **1948.** 7 figs., 2 tables. English summary p. 20. **DWB**—A review (with reproductions of photographs of complicated apparatus) of work done by REGENER in 1939 and 1940 in determining the structure of the stratosphere through soundings of temperature and humidity and chemical analysis of oxygen (ozone) content up to 22 km. Work of TEISSERENC DE BORT and STRÖMER also reviewed. *Subject Headings:* **Structure of the stratosphere, Ozone distribution, E. Regener.**—*M.R.*

2.5–55 551.510.53

Pickering, W. H. and Chapman, Sydney, **Upper atmospheric research. Progress Report for the first quarter (April 1, 1950 to July 1, 1950).** Pasadena, California Institute of Technology, July 1, **1950.** 4+leaves. Typescript. U. S. War Dept., Signal Corps, Contract No. DA 36-039-sc-34. **DWB**—Preliminary report indicating scope of investigations to be carried out, and a few specific problems (such as determination of temperature at high levels, study of the polar current system of magnetic storms and of long lasting meteor trails). Sampling difficulties stressed. *Subject Headings:* **Upper atmosphere research, Meteor trails, Magnetic storms, Temperature of the stratosphere.**—*M.R.*

2.5–56 551.510.53

Righini, G. and Godoli, G., **The physical meaning of the character figures of solar phenomena.** *Journal of Geophysical Research*, 55(4):415–422, Dec. **1950.** 6 figs., ref. **DWB**—The authors have correlated the character figures estimated on spectroheliograms with the areas of Ca—flocculi and bright and dark Hα—flocculi, measured on the same plates, for the period 1932–1949. Monthly means of the character figures plotted against areas for Ca—flocculi and bright and dark Hα—flocculi and monthly smoothed variation of character figures and areas are presented. It is suggested "that the character figures are a function of the areas only." *Subject Headings:* **Upper atmosphere, Solar phenomena.**—*I.L.D.*

2.5–57 551.510.534

Regener, Victor H., **Vertical distribution of atmospheric ozone.** *Nature, London*, 167(4242):276–277, Feb. 17, **1951.** 2 figs., 4 refs. **DWB**—Gives results of spectroscopic determination of vertical distribution of ozone, 10–30 km., in 4 sounding balloon ascents. Maximum ozone in cm./km. was .02 to .035 between 15 and 25 km., maximum ozone molecules/10^6 air molecules 6 at 25 km. *Subject Headings:* **Atmospheric structure, Ozone distribution.**

2.5–58 551.510.535

Rawer, Karl, **Sur la répartition approximative de l'ionisation de la couche F2 du point de vue mondial.** [On the approximate distribution of ionization of the F2 layer on a global scale.] *Académie des Sciences, Paris, Comptes Rendus*, 252(1):98–100, Jan. 3, **1951.** 3 refs. **DWB**—A note on the influence of longitude, the earth's magnetic field, the continents and oceans on the ionization field in the F2 layer. *Subject Headings:* **F2 layer, Ionization.**—*M.R.*

2.5–59 551.510.535

White, Gladys R. and Wachtel, Irma S., **True heights of the F2 layer.** *Journal of Geophysical Research*, 54(3):239–242, Sept. **1949.** 2 figs., 3 refs. Summary p. 239. **DWB**—Electron densities at Washington on quiet days were calculated from critical frequencies assuming a parabolic distribution. Mean semithickness of F1 layer 60 km. in winter, 130 km. in summer, F2 layer 80 and 105 km. Height of maximum density, F1 200 km. and F2 280 km. at noon and about 300 km. at midnight. *Subject Headings:* **Ionosphere, Washington, D. C.**—*C.E.P.B.*

MECHANICS AND THERMODYNAMICS OF THE ATMOSPHERE

2.5–60 551.511:551.508.99:532.5

Fultz, Dave, **Experimental studies related to atmospheric flow around obstacles.** *Geofisica Pura e Applicata*, 17(3–4):88–93, Oct.–Dec. **1950.** 3 figs., 8 refs. In English. **MH-BH**—Laboratory experiments made at the University of Chicago to determine the manner in which fluids behave in a rotating hemispherical shell of liquid with a cylindrical barrier placed at different positions with respect to the zonal motion, are described and illustrated. This is a condensation of material contained in an article by FULTZ in *Tellus* (*see item* No. 2.2–61 in Feb. 1951, *Meteorological Abstracts*) with special reference to problems of air flow over mountains. *Subject Headings:* **Orographic effects, General circulation, Mountain meteorology, Fluid mechanics.**—*M.R.*

2.5–61 551.511

Hollmann, Günther, **Eine Überführung des ersten Wärmehauptsatzes in die hydrodynamischen Gleichungen.** [An application of the first law of heat in hydrodynamic equations.] *Zeitschrift für Meteorologie*, 4(7–8):222–229, July–Aug. **1950.** 11 refs., 55 equations. **MH-BH**—The use of vertical space coordinates in theoretical meteorology leads to great analytical difficulties especially in nonadiabatic processes. Author replaces them by potential temperature and pressure as independent variables and develops a system of fundamental equations. He finds that the geostrophic wind blows parallel to the isolines of enthalpy and potential energy on isentropic surfaces, and a heat source or sink is equivalent to an ageostrophic component towards an isentropic temperature max. or min. The meridional circulation of an ideal atmosphere is discussed on these lines. *Subject Heading:* **Thermodynamics of the atmosphere.**—*C.E.P.B.*

2.5–62 551.511:551.515.11

Knighting, E. and James, R. W., **Large-scale vortex motion in the atmosphere.** *Royal Meteorological Society, Quarterly Journal*, 77(331):136–137, Jan. **1951.** **MH-BH**—Criticism by KNIGHTING of paper by JAMES (*see item* No. 9–53 in Sept. 1950, *Meteorological Abstracts*). Reply by JAMES and some amendments to the original. *Subject Headings:* **Cyclones, Vorticity.**

2.5–63 551.511

§Koo, Chen-chao, **Some aspects of the cut-off cyclonic vortices.** *Chinese Geophysical Society, Journal*, Nanking, 2(1):104–120, June **1950.** 10 figs., 5 refs. In English, Chinese summary p. 104. **DWB**—The number of vortices, their frequency of occurrence and their frequency of passage have been determined on the basis of 2-year records of 500 mb. charts given in the Daily Weather Report (Upper Air Section of the Meteorological Office, London) and on the basis of about one-year record of 500 mb. charts given in the Northern Hemisphere Historical Weather Maps (U. S. Air Weather Service). Methods of determining these data are presented, and the data are plotted on maps. The general characteristics of vortex movement are described. The author concludes that European vortices have a higher equilibrium latitude than the American ones, and that the equilibrium latitude is lower in the summer. The synoptic structures of vortices in North America and in Europe are analyzed and compared. *Subject Headings:* **Vorticity, Europe, North America.**—*I.L.D.*

2.5–64 551.511

Petterssen, Sverre, **Associations between the vorticity of the large-scale air currents and the occurrence of subsidence and convection.** *American Meteorological Society, Bulletin*, 30(5):191–192, May **1949.** 2 tables, 2 refs. **MH-BH**—Relative vorticity round a vertical axis defined as $V/r - \partial V/\partial n$ is termed cyclonic when V/r and $V/\partial n$ are both + and anticyclonic when both −; n is length along an axis at right angles and to left of wind. At 750–300 mb. over British Isles, in subsidence 79–82% of vorticity were anticyclonic, 3–6% cyclonic. In deep or very deep convection, vorticity was 85–94% cyclonic. *Subject Headings:* **Dynamics of the atmosphere, Vorticity.**—*C.E.P.B.*

2.5–65 551.511:551.524:551.558.1

Robinson, G. D., **The vertical convective heat flux in the atmosphere—a critical essay.** *Royal Meteorological Society, Quarterly Journal*, 77(331):61–75, Jan. **1951.** fig., table, 10 refs., 10 equations. **MH-BH**—Heat transfer in the vertical by processes operating over an area not more than tens of miles is classed as: "free," due to imposed temperature differences, or "forced," resulting from forces outside the system. Vertical convective flux in unsaturated air is defined in terms of mean product of density, vertical velocity and temperature. The heat flux is then related to the potential temperature gradient. The neglect of buoyancy by MONTGOMERY and the overestimate of its importance by PRIESTLY and SWINBANK are severely criticized and a number of the latter's examples reconsidered, including the heat balance at the earth's surface in *anticyclonic gloom* and the maintenance of a subadiabatic gradient in the atmosphere as a whole. Reply by PRIESTLEY and SWINBANK. *Subject Headings:* **Energy exchange, Vertical motion.**

GENERAL CIRCULATION

2.5–66 551.513:551.557.2(4)

*Hovmöller, Ernest, **Zonal and meridional air currents in the stratosphere over Europe.** *Geofisica Pura e Applicata*, 17(3–4):112–120, Oct.–Dec. **1950.** 2 figs., 5 tables, 8 refs. In English. **MH-BH**—A statistical study of daily, monthly and seasonal upper air winds at the 300 and 100 mb. levels over Lerwick and Larkhill in the British Isles, based on data for 1945–49, shows some remarkable features of the zonal and meridional circulation not evident from tables of monthly mean values. The variations in wind from day to day are shown to be very rapid and sometimes extreme, especially in the region of the tropopause (or *jet stream*). *Subject Headings:* **Upper air winds, General circulation, British Isles.**—*M.R.*

2.5–67 551.513

Jaw, Jeou-jang, **On the stability of zonal circulation.** *Chinese Geophysical Society, Journal*, Nanking, 2(1):66–73, June **1950.** 11 refs., 25 equations. In English. **DWB**—This article deals with the dynamical stability of the zonal motion in the basic circulation. The thermal wind equation representing the necessary conditions of the stationary state of the atmosphere is derived from the equations of motion and of continuity. The introduction of the perturbed circulation is derived and the fundamental equations for circumpolar symmetric perturbation are presented. These equations are applied to the study of a single material ring of air which, under the influence of external causes, starts to move from its position of equilibrium. Equations representing criteria for perturbation in a horizontal and vertical direction are presented. In the case of horizontal perturbation the stability of the basic zonal circulation depends upon whether the absolute vorticity is positive or negative, and in the case of vertical perturbation the basic circulation is always stable. *Subject Headings:* **Zonal circulation, Instability.**—*I.L.D.*

2.5–68 551.513

Prandtl, Ludwig, **Beiträge zur Mechanik der Atmosphäre.** [Contributions to the mechanics of the atmosphere.] Paris, P. Dupont, **1939.** 32 p. 11 figs., refs., 21 equations. French summary p. 1. **DLC**—A classical work extending the work of V. BJERKNES wherein the author brings to the study of the general circulation the concept and experience of the hydrodynamicist who has constantly dealt with both theoretical and practical aspects of fluid motion. First, he treats the general circulation of the atmosphere, using a simplified model which is now standard. Then he considers the effect of orographic barriers on the circulation, the mechanism of cyclones and anticyclones and, finally, the theory of local circulation patterns (surface winds, cold front squalls, cumulus or convective cloud formation, inversion, friction effects, etc.). Interesting laboratory models are illustrated. Discussion by SCHMIDT, BJERKNES, WEICKMANN and others follows text. *Subject Headings:* **Mechanics of the atmosphere, General circulation, Hydrodynamics.**—*M.R.*

2.5–69 551.513

Rossby, Carl-Gustav, **On the dynamics of certain types of blocking waves.** *Chinese Geophysical Society, Journal*, Nanking, 2(1):1–13, June **1950.** 3 refs., equations. In English.

DWB—The sudden breakdown of well defined, zonal, west wind currents or jets in middle latitudes after a fairly long period of stability occurs in the form of a "blocking wave" which progresses slowly westward, destroying the zonal motion to the west and leaving in its wake a series of cyclonic and anticyclonic vortices. It is shown theoretically that this process is analogous to a moving hydraulic jump or bore. The author considers the nondivergent horizontal motion of a west wind jet as an incompressible atmosphere and attempts to show that "for a constant volume transport the momentum transfer across a vertical plane normal to such a jet, if expressed as a function of some characteristic velocity, possesses a minimum value." Since the two solutions, compatible with the continuity and momentum requirements, represent two different energy levels a necessary requirement for the development of jumps is fulfilled. *Subject Headings:* **Blocking action, Dynamics of the atmosphere.**—*I. L. D.*

2.5–70 551.513

§Willett, Hurd C., **The circulation of the upper troposphere and lower stratosphere.** (In **Centennial, collected papers presented at the Centennial Celebration. Washington, D. C., September 13–17, 1948.** Washington, D. C., American Association for the Advancement of Science, **1950.** p. 192–301. 13 figs., 6 refs.) **MH-BH**—A brief discussion of the mean seasonal state of the zonal and meridional circulation in the vicinity of the tropopause. The study is based on available soundings between 5 and 20 km. above sea level, and is illustrated by actual charts and cross sections for certain specific periods when normal or anomalous conditions existed. Unusual features of the circulation are analyzed and a tentative explanation given for the mechanism of the upper tropospheric circulation. The differences between classical theories and that of Rossby (which is presented here) are enumerated. Article based on material previously published in *Science*. *Subject Headings:* **Atmospheric circulation, Northern Hemisphere.**—*M. R.*

2.5–71 551.513.1

†Starr, Victor P., **A note on the eddy transport of angular momentum.** *Royal Meteorological Society, Quarterly Journal*, 77(331):44–50, Jan. **1951.** 2 figs., table, biblio. p. 49–50. **MH-BH**—A pilot study was made from radio winds at 52 stations in North American sector in Feb. 1949 in 6 groups from 20–80°N. For each group, from 1000–100 mb., means are set out of the eastward and northward components $\bar{u}$, $\bar{v}$, the product of the means $\bar{u}.\bar{v}$, the mean of the products $\overline{uv}$, and the difference $\bar{u}.\bar{v}-\overline{uv}$. The integrated transport near 35°N. is 41.5×10^{25} gm.cm²/sec., 4 times the estimate for the whole cap north of 35°N. Reasons for the discrepancy are discussed. *Subject Headings:* **Mechanics of the atmosphere, Transport of momentum.**

2.5–72 551.513.1 551.553.21

†*Flohn, Hermann, **Studien zur allgemeinen Zirkulation der Atmosphäre.** [Studies on the general circulation of the atmosphere.] *Germany, Deutscher Wetterdienst in der US-Zone, Berichte*, No. 18, **1950.** 52 p. 28 figs., 8 tables, refs. German and English summaries. **MH-BH**—This issue includes three important memoirs summarizing the present position with new interpretations.

1. **Über den Mechanismus der allgemeinen Zirkulation.** [On the mechanism of the general circulation.] p. 5–20. 52 refs. Earlier theories of the vertical circulation are inconsistent with the close statistical agreement between upper winds and isobars. The circulation is cellular and there is no continuous subtropical high pressure zone. The equatorial west wind zone shows that some layers near the equator act as cold sources but most of the t-ϕ solenoids lie between 35 and 60°. Author then develops a theory according to which the circulation is driven by the temperature difference ground—tropopause (instead of equator—pole) and takes the form of a quasi-geostrophic cellular horizontal mass exchange, in which cyclones and anticyclones are integral parts.

2. **Ablauf und Struktur des ostasiatischen Sommermonsuns.** [Trend and structure of the summer monsoon of East Asia.] p. 21–33. 62 refs. The normal annual variation of the weather and its "singularities" are studied by daily averages in Japan and China. The synoptic climatology of the summer rainy season is then examined by means of upper winds and height of 700 mb. surface. The early summer ("plum") rains are interpreted as a series

of upslides of moist SE–SW winds along a frontal zone over cold Siberian air from WNW. The autumn rains are typhoonal.

3. **Tropische und aussertropische Monsunzirkulation.** [Tropical and extra-tropical monsoon circulation.] p. 34–52. 8 tables, 95 refs. The term "monsoon" is given its literal meaning of "season," as a seasonal variation of wind currents without regard to associated weather. From the standpoint of the first paper and with the aid of all available upper winds and pressures, a new interpretation is offered, first of tropical monsoons (India, Indonesia, Africa) and secondly of extra-tropical "monsoons" (east and west coasts, Europe, North Asia, North America). All are traced to seasonal movements of planetary wind belts; in the tropics, of the unstable moist equatorial westerlies; in higher latitudes, of the subpolar trough and the northern edge of the subtropical highs. Dynamic effects on E. and W. coasts are also considered. *Subject Headings:* **Atmospheric circulation, Wind variations, Monsoon circulation, East Asia.**—*C.E.P.B.*

ATMOSPHERIC DISTURBANCES

2.5–73 551.515:551.524.7:551.547

Misawa, Z., **Statistical investigation on the relation between pressure and temperature variations in the free atmosphere.** (2). *Journal of Meteorological Research*, Tokyo, 2(8):226–236, July **1950.** 25 figs., table, ref. In Japanese, English summary p. (5). **DWB**—From a statistical comparison of pressure changes at 0, 4 and 10 km. and of temperature changes, it is concluded that some parts of pressure change are due to temperature changes in the troposphere and others to temperature changes in the stratosphere. Models of the 3-dimensional structure of a cyclone and anticyclone are derived, agreeing with FICKER's. *Subject Headings:* **Atmospheric disturbances, Temperature variations, Pressure variations.**—*C.E.P.B.*

2.5–74 551.515

Stranz, D., **"Kuriositäten" im Wettergeschehen.** ["Curiosities" in weather processes.] *Leipzig, Universität, Geophysikalisches Institut, Veröffentlichungen*, Ser. 2, 15:191–206, **1949.** 2 figs., tables, 6 refs. **DWB**—Weather phenomena have a *normal* seasonal, areal or height regime. However, there are many inversions of this regime, or singularities, which the author points out and illustrates by specific examples from recent European records. Among these are cases where January is warmer than March, or June temperatures aloft lower than December. Variations in relative topography of isobaric surfaces, stratosphere temperatures or tropopause height are also mentioned. *Subject Heading:* **Singularities.**—*M.R.*

2.5–75 551.515.1:551.577.51

Arakawa, H., **Path of cyclones and orographic rainfall.** *Meteorological Society of Japan, Journal, 2nd Ser.*, 28(2):62–66, Feb. **1950.** 2 figs., equations. In Japanese, English summary p. 66. **DWB**—The intensity of rainfall in a straight mountainous archipelago is calculated from the quantity of air ascending the barrier for a depression advancing along the archipelago and for one crossing it at right angles. *Subject Headings:* **Cyclones, Precipitation, Topographic effects, Orographic rainfall.**—*C.E.P.B.*

2.5–76 551.515.11

Palomares Casado, Manuel, **La convergencia por rozamiento y las corrientes verticales en España.** [Convergence by friction and vertical currents in Spain.] *Revista de Geofísica*, Madrid, 9(34):147–165, April–June **1950.** 6 figs. (2 fold.), 3 fold. graphs, equations. English summary p. 145. **DWB**—A study of the effect of convergence resulting from friction of air against the ground, upon clouds and precipitation formed by ascending currents and a comparison of those effects with those produced by the passage of fronts. The author analyzes theoretically the relationship between change of pressure with altitude under the assumption of constant and variable friction coefficients. From an analysis of synoptic data for three months in 1948 in Madrid, it is concluded that when the friction coefficient is consistent and orographic factors are negligible the influence of fronts upon cloud formation and precipitation is greater than that of frictional convergence. *Subject Headings:* **Convergence, Fronts, Madrid, Spain.**—*I.L.D.*

2.5–77 551.515.2(759)

Anderson, E. A. and Saffir, Herbert S., **Miami suffers slight structure damage in severe hurricane.** *Civil Engineering*, 20(12):36–38, Dec. **1950.** fig., 6 photos. **DLC**—Pictures show damage to radio towers and other structures during hurricane of Oct. 17, 1950. Anemograph record from top of Ingraham Bldg. in Miami shows peak gusts above 150 m.p.h. for over 15 minutes just before calm and wind shift. After shift peak gusts average 120 m.p.h. [Statement about a sustained velocity of 150 m.p.h. for over 15 minutes is erroneous, as it is made by someone unfamiliar with evaluating anemograph traces—ed.] Maximum gust speed of 165 m.p.h. probable. Wind pressures on structures calculated. It is estimated that 150 m.p.h. would indicate pressure of 74 pounds per sq. ft. and 165 would exert pressure of 90 pounds per sq. ft. Overturned freight cars indicated 52 p.s.f. or more. *Subject Headings:* **Hurricane damage, Florida.**—*M.R.*

2.5–78 551.515.2(512.5)

*Heywood, G. S. P., **Hong Kong typhoons.** Royal Observatory, Hong Kong, **1950.** $5 mex. 23 p. 15 figs., 3 tables, 9 refs. **DWB**—Discussion of tropical cyclones in general. For those observed in Hong Kong from 1841–1883, 1884–1941 and 1946–49, frequency by years and months, tracks, lowest pressure, highest wind speeds, duration of gales, precursory signs, rainfall, weather, sea, swell, tides and effect of wind and rain on structures are given. Notable typhoons are mentioned. Barograms, anemograms, storm tracks by months, wind roses, etc. are reproduced. Table gives details of all storms 1884–1949. *Subject Headings:* **Tropical cyclones, Typhoons, Hong Kong.**—*M.R.*

2.5–79 551.515.2:539

Longley, Richmond W., **On the energy in a hurricane.** *American Meteorological Society, Bulletin*, 30(5):194–195, May **1949.** equations. **MH-BH**—Energy of Hiroshima atomic bomb calculated as 9.7×10^{20} ergs, that of an inch of rain falling on a sq. mile as 1.7×10^{21}. Rainfall of hurricane of Sept. 20–23, 1948 equivalent to 1.9×10^{26} ergs/day or $2\frac{1}{2}$ atomic bombs/sec. Kinetic energy of hurricane winds 1.7×10^{24} ergs. *Subject Headings:* **Hurricane dynamics, Atom bombs.**—*C.E.P.B.*

2.5–80 551.515.4:551.515.8

Andre, Milo J., **Distribution of instability weather types with respect to summer cold fronts in the United States.** *American Meteorological Society, Bulletin*, 30(6):228–230, June **1949.** 3 figs. **MH-BH**—All observations of thunder or showers between 200 miles behind and 500 miles ahead of an advancing cold front were classified by distance from front. Showers with squall lines mostly coincided with them. Diurnal variation shows organized prefrontal activity at a minimum between $7\frac{1}{2}$ and $13\frac{1}{2}$ E. *Subject Headings:* **Cold fronts, Instability showers.**—*C.E.P.B.*

2.5–81 551.515.4:551.557

Byers, Horace R. and Battan, Louis J., **Some effects of vertical wind shear on thunderstorm structure.** *American Meteorological Society, Bulletin*, 30(5):168–175, May **1949.** 7 figs., 10 refs., equation. **MH-BH**—Observations with 3 cm. radar are used to construct W–E sections through a thundercloud up to 30,000 ft. showing displacement above 15,000 ft. Vector difference of observed winds Y is related to that of cloud velocity X by $Y=6.13+1.07X$ ($r=.90$). The maximum height of the radar cloud decreases with increasing wind shear 5–30,000 ft. The displacement of the upper part of the cloud affects the evolution of the cloud and may help in initiating the downdraft and releasing precipitation. *Subject Headings:* **Thunderstorm structure, Wind shear.**—*C.E.P.B.*

2.5–82 551.515.4:551.593:551.594(492)

Naar vrijwillige waarnemingen in 1944. [Voluntary observations for 1944.] (*K.*) *Nederlands Meteorologisch Instituut, Onweders, optische verschijnselen, enz. in Nederland*, [Thunderstorms, optical phenomena, etc. in the Netherlands], Deel 65, No. 81, **1949.** 58 p. 5 figs., 18 tables. **DWB**—This study presents a detailed report and description of the

various electrical and optical meteorological phenomena observed in the Netherlands in 1944. The synoptic conditions associated with each thunderstorm and its characteristics are discussed in detail and presented chronologically by month. The number of cases reported of lightning strokes, the damage and fatalities and the relationship of lightning stroke to lightning conductors and the incidence of St. Elmo's fire are discussed. Incidence of hail and of water spouts is presented. The daily and hourly occurrence of thunderstorms; and the daily occurrence of thunderstorms, lightning, hail and lightning strokes are presented in tables. The optical phenomena discussed are as follows: twilight phenomena, rainbows, halos, solar pillars, arcs and visible sound waves. The dates of occurrence of the various phenomena and the accompanying atmospheric conditions are presented. *Subject Headings:* **Thunderstorms, Optical phenomena, Electrical phenomena, Netherlands.**—*I. L. D.*

2.5–83 551.515.41

Heyer, E., **Über einige Gewitter des Sommers 1950.** [On some thunderstorms of the summer of 1950.] *Zeitschrift für Meteorologie*, 5(2):35–42, Feb. **1951.** 7 figs., table. **MH-BH**—A series of thunderstorms of unusual character occurred in May–Sept. 1950, especially near Potsdam. From upper air ascents they are classified as: 1. Warm air thunder (latent lability); 2. In warm air, released by high level cold air outrunning a front; 3. Caused by high level cold air (without recognizable front); 4. "Einzug" [entrainment] thunder, a term introduced to indicate the entry of surface warm air into an air stream from a different direction; 5. Cold front thunder with *Einzug* effect. Each type is illustrated by height curves of relative humidity and equivalent potential temperature. *Subject Headings:* **Thunderstorm dynamics, Germany.**—*C.E.P.B.*

2.5–84 551.515.8:551.557

Bleeker, Wouter, **The relation between fronts and jetstream.** *American Meteorological Society, Bulletin*, 30(5):190–191, May **1949.** fig. **MH-BH**—Brief discussion of formation of shear patterns and circulation over sea-land border forming a complex "front" as a vertical zone of solenoid concentration. Applied to land and sea breeze circulation. *Subject Headings:* **Fronts, Jet stream, Upper air winds.**—*C.E.P.B.*

2.5–85 551.515.8:551.558

§Nyberg, A., **A study of vertical motion and formation of fronts and jet streams.** Royal Meteorological Society, Centenary Proceedings **1950**:81–89. 7 figs., 6 refs. **MH-BH**—Author discusses, from synoptic viewpoint, the formation of fronts and jet streams, with an example of frontogenesis showing height and temperature of 500 and 200 mb. levels on Nov. 7 and 8, 1948 and the calculated vertical displacement of air particles on Nov. 9–10. On both sides of the jet, cold air is sinking and warm air rising, which decreases the sharpness of the front. The wind speed increases in the frontogenetic area, part of the potential energy being converted into kinetic energy. *Subject Headings:* **Frontogenesis, Jet stream.**

2.5–86 551.515.8(41)

§Sansom, H. W., **A study of cold fronts over the British Isles.** *Royal Meteorological Society, Quarterly Journal*, 77(331):96–120, Jan. **1951.** 11 figs. (incl. synoptic charts), 10 tables, 14 refs., append. **MH-BH**—Fifty cold fronts which crossed the British Isles in 1944–48 were examined, using a radiosonde ahead and behind. Two types were defined by horizontal difference in mixing ratio. Type A, katafronts, show a sharp inversion or isothermal behind the front surmounted by very dry air and bring rapid clearance followed by fine weather. Type C, anafronts, show no discontinuity and high humidity and bring more abrupt changes of wind and temperature and more precipitation. The variation of wind with height is also different, anafronts giving rapid shear. Type B is intermediate. Fronts in summer and autumn were nearly all A, in winter and spring mostly C. The average slope above the friction layer was calculated as 1/300 for A and 1/70 for C. Vertical velocity of warm air 2.5 cm./sec. down in A, 10 cm./sec. up in C, but there is often instability at the nose of A. Various other properties are tabulated and a number of examples analyzed synoptically and with vertical sections. *Subject Headings:* **Cold fronts, British Isles.**

2.5–87 551.515.82(481)

§Knudsen, John, **On a warm front surface over south-western Norway.** *Meteorologiske Annaler*, 3(5):137–155, **1950.** 8 figs., 8 refs., equations. **DWB**—Detailed temperature and precipitation records at stations (at several elevations) in the mountains of southern Norway are used to determine the effect of these mountains on the warm front slope and resulting vertical motion and precipitation. The situation for Feb. 6 and 7, 1934 is analyzed synoptically and dynamically and the following conclusions drawn: 1) the lower part of the warm front steepens and slows down on reaching the mountains; 2) the upper part proceeds eastward with a reduced slope; 3) the transition zone of the warm front acts as a gliding surface for the warm air, reducing friction and increasing the intensity of precipitation. *Subject Headings:* **Warm fronts, Orographic effects, Mountain meteorology, Norway.**—*M.R.*

RADIATION AND TEMPERATURE

RADIATION

2.5–88 551.521:551.510

Menzel, Donald H., **The sun and the earth.** (In **Centennial, collected papers presented at the Centennial Celebration. Washington, D. C., September 13–17, 1948.** Washington, D. C., American Association for the Advancement of Science, **1950.** p. 185–191. 2 figs., equation.) **MH-BH**—A brief discussion of the various ways in which the sun, or rather changes in the radiation received from the sun, affect the earth's upper atmosphere and possibly the weather at the surface. The ionizing effects following solar disturbances and the structure of the ionosphere are discussed briefly. Magnetic effects, changes in temperature of the ionosphere, luminous clouds, auroras, solar prominences, sunspots and theories as to climatic changes and glacial periods are all treated in the light of the sun and its variations. *Subject Headings:* **Radiation effects, Solar influences, Ionosphere.**—*M.R.*

2.5–89 551.521 551.521.4

Richardson, R. A. and Hulburt, E. O., **Sky-brightness measurements near Bocaiuva, Brazil.** *Journal of Geophysical Research*, 54(3):215–227, Sept. **1949.** 8 figs., 3 tables, 7 refs., 2 equations. Summary p. 215. **DWB**—Sets of measurements of illumination from sun alone are plotted logarithmically against cosec (hour angle) giving straight lines corresponding to absorption factors of 0.22 to 0.42. Comprehensive observations of brightness and polarization of sky light are tabulated for all parts of the sky for sun heights 5–60° during progress of evening twilight, and of various parts of sky (including zodiacal light and milky way) at night. *Subject Headings:* **Sky brightness measurements, Solar illumination, Light of the night sky, Brazil.**—*C.E.P.B.*

2.5–90 551.521:523.78

Richardson, R. A. and Hulburt, E. O., **Solar illumination and zenith sky brightness during the total solar eclipse of May 20, 1947.** *Journal of Geophysical Research*, 54(3):229–238, Sept. **1949.** 5 figs., 2 tables, 10 refs., 2 equations. Summary p. 229. **DWB**—Observations at Bocaiuva, Brazil, of the sky brightness with very thin cirrus. Solar illumination varied almost linearly during penumbra and agrees with calculated values. Zenith sky brightness changed from over 100 to 0.37 candles per sq. ft. at totality, then back to 200. There was a similar variation of horizon illumination. Observed scattering agreed within 40% with calculation and was mostly multiple scattering below 10 km. *Subject Headings:* **Solar illumination, Zenith sky brightness, Solar eclipses, Brazil.**—*C.E.P.B.*

2.5–91 551.521.1

*Boerema, J., **Solar radiation measurements in the Netherlands Indies, Part I. Pyrheliometric observations by eye reading from 1915–1925.** *Indonesia, (K.) Magnetischen Meteorologisch Observatorium te Batavia, Verhandelingen*, No. 34:3–14, **1948.** fig., 6 tables, 5 refs., equation. Berlage, H. P., Jr., **Part II. Recording radiation of sun and sky from 1926–1941.** *Ibid.*, p. 15–21. fig., 2 refs. **Part III. [Tables].** *Ibid.*, p. 22–47. 26 tables. **MH-BH**—Fluctuations of air pressure in Java during the abnormal period 1912–14, possibly resulting

from the Katmai eruption and attending a decrease in solar radiation, led to the establishment of observations of intensity of solar radiation with a Smithsonian silver disk pyrheliometer in 1915 at Batavia (and occasionally at other places). Later observations were made with a portable Michelson type actinometer. Results for subsequent years are summarized in detail in these two articles. Comparisons are given with stations in Holland and U.S.A. *Subject Headings:* **Solar radiation measurements, Indonesia.**—*M.R.*

2.5–92 551.521.1:697

Hawkins, Harold M., **Domestic solar water heating in Florida.** *Florida, University, Engineering and Industrial Experiment Station, Bulletin,* Gainesville, No. 18, Sept. **1947.** 26 p. 10 figs., 5 tables, 20 refs. **DWB**—The principles of solar water heaters are discussed and illustrated by means of schematic diagrams and photographs. Percentage of solar radiation absorbed, reflected or transmitted in winter and summer in Florida shown diagrammatically. Details of construction, installation, operation and the economies of solar water heating in northern and southern Florida thoroughly treated. Many hundreds of installations have been successful in Florida. *Subject Headings:* **Solar water heaters, Florida.**—*M.R.*

2.5–93 551.521.1

Kennedy, Robert E., **Computation of daily insolation energy.** *American Meteorological Society, Bulletin,* 30(6):208–213, June **1949.** 2 figs., 3 tables, 10 refs., 3 equations. **MH-BH**—Tables give, for different latitudes, the solar intensity at exterior of atmosphere, I_o, in BT.U./in²/day, average daily solar air mass m and altitude-pressure relations. Absorption coefficient a is determined from these and observed total radiation on a horizontal surface plotted against observed sunshine duration and cloudiness, for various stations. This gives curves from which a can be estimated for any place and I calculated. Error generally less than 2%. *Subject Heading:* **Insolation.**—*C.E.P.B.*

2.5–94 551.521.1

Sato, Takao, **Researches on the mathematical insolation due to direct sun during any period.** *Tohoku University, Science Reports, 5th Ser., Geophysics,* 2(2):86–106, Aug. **1950.** 10 figs., 10 tables, numerous equations. In English. **MH-BH**—A highly mathematical discussion leads to coefficients for calculation of direct insolation on surfaces of various shapes and inclinations including allowances for atmospheric absorption. *Subject Heading:* **Solar radiation.**—*C.E.P.B.*

2.5–95 551.521.11(41/2)

Hancock, D. S., **An analysis of sunshine values in the British Isles for the period 1909–1948.** *Royal Meteorological Society, Quarterly Journal,* 77(331):127–131, Jan. **1951.** 8 tables, refs. **MH-BH**—Continuation of paper in *Quarterly Journal* for 1935. For England and Wales, Scotland, Ireland and British Isles as a whole monthly and annual values of sunshine 1934–1948 are given as percent of 1909–1933. Values for each month were correlated with those for other months in the same year and some large coefficients (but of irregular sign) were found. [The coefficients look improbable.] Values in the three countries are also intercorrelated. *Subject Headings:* **Sunshine, England, British Isles.**

2.5–96 551.521.12(45)

Thams, J. Chr., **Misura della radiazione solare diretta a diverse altezze nel versante meridionale delle Alpi. (Comunicazione preliminare.)** [Measurement of direct solar radiation at different altitudes on the southern slopes of the Alps. (Preliminary communication.)] *Geofisica Pura e Applicata,* 17(3–4):121–126, Oct.–Dec. **1950.** 3 figs., 3 refs. English, French and German summaries p. 121. **MH-BH**—The intensity of direct solar radiation on days with föhn wind and on damp or foggy days is compared graphically for stations on the southern slope of the Alps at 400 and at 1100 m. above sea level. The strongest insolation occurred at both stations on days with föhn and the difference between the insolation at Locarno-Monti and Monte Bri was less on days with föhn than on damp days. *Subject Headings:* **Solar radiation, Föhn effects, Mountain meteorology, Locarno-Monti, Switzerland.** —*M.R.*

2.5–97 551.521.1:551.521.63

Coblentz, W. W., **Correlation of bioclimatic ultraviolet and total solar radiation in Washington, D. C., 1941–1948.** *American Meteorological Society, Bulletin*, 30(6):204–207, June 1949. fig., table, 16 refs. **MH-BH**—An analysis is made of all the data available on extra-terrestrial UV radiation and the amount reaching the earth's surface. No modification of the methods of estimating the biologically effective component is required. The ratio of daily amount of incident UV in Washington (2900–3150 Å) to total solar and sky radiation varies from .019 in Dec. to .069 in July. *Subject Heading:* **Ultraviolet light.**—*C.E.P.B.*

TEMPERATURE

2.5–98 551.524.31(82)

§Wölcken, K., **La situación meteorológica excepcional en la República Argentina durante los días 7 al 13 de mayo de 1950.** [Unusual meteorological conditions in the Argentine Republic from May 7–13, 1950.] *Ciencia e Investigación*, 6(7):327–330, July 6, 1950. 3 figs., table. Reprint available. **MH-BH**—Record high temperatures occurred in Buenos Aires, the mean on May 9–13 being 10°C. above normal for the days. Analyzed charts for May 8 and 11 show an influx of tropical air from Brazil. *Subject Headings:* **Temperature variations, Argentina.**—*C.E.P.B.*

2.5–99 551.524.32:551.521.1

Prescott, J. A. and Collins, Joyce A., **The lag of temperature behind solar radiation.** *Royal Meteorological Society, Quarterly Journal*, 77(331):121–126, Jan. 1951. 4 figs., table, 5 refs., equation. **MH-BH**—The annual variation of temperature at many places and points in the oceans was calculated as first harmonic from monthly means, and similarly that of astronomical solar radiation from Angot's tables. The lags in days, air and sea temperature behind solar radiation are shown on world maps; for air the lag varies from over 100 in tropical oceans to below 25 in interior of continents (15 in S. Africa), for sea the lag is greater. A more detailed map is given for U.S.A. *Subject Headings:* **Temperature variations, Solar radiation, Oceans.**

2.5–100 551.524.35

Lauscher, Friedrich, **Die Hitzeperiode Ende Juni—Anfang Juli 1950.** [The heat period—end of June to beginning of July 1950.] *Wetter und Leben*, 3(1–2):8–12, Jan. 1951. 2 tables, 3 refs. **MH-BH**—Since spring the 500 mb. chart showed upper low far to south and high ridge to north, keeping out maritime fronts. June was hot, sunny and dry and an abnormal heat wave lasted from June 29–July 5, giving a maximum of 37.7°C. at Vienna. Frequency and general weather type of very hot days are discussed—they occur most often with subtropical air from west. *Subject Headings:* **Temperature variations, Vienna.**—*C.E.P.B.*

2.5–101 551.524.35:523.78:551.543.5

Terada, K., **The change of air temperature and turbulence in the lower atmosphere and the minute change of pressure.** In: Report of solar eclipse observation May 9, 1948. *Geophysical Magazine, Tokyo*, 19(3–4):135–145, Dec. 1949. 13 figs., table, 3 equations. In English. **MH-BH**—The hot wire anemometer, nickel resistance thermometers, Shaw-Dines type microbarograph and the methods of making the various observations are described. Owing to strong winds at ground level, turbulence was not at a minimum at time of maximum obscuration. Temperature measurements made at 11, 22, 50, 100 and 250 cm. above the ground indicated a decline of temperature with altitude and with advance of the eclipse; minimum temperatures appeared nearly simultaneously at all levels. It is shown mathematically that the observed temperature pattern is explained by the assumption that the eddy viscosity changes its value as a power series of height. The effect of eclipse upon barometric pressure could not be ascertained because of interference of a passing cyclone during the time of the eclipse. *Subject Headings:* **Temperature variations, Pressure variations, Solar eclipses, Japan.**—*I.L.D.*

2.5–102 551.524.36(436)

Lauscher, Friedrich, **Normalwerte der "Sommertage" für die Ostalpenländer.** [Normal values of "summer days" in the East Alpine lands.] *Wetter und Leben*, 3(1–2):17–22, Jan. **1951.** fig., 3 tables. **MH-BH**—Table 1 gives mean monthly frequency of days with maximum temperature of at least 25°C. for 50 places in Austria, 1881–1930. In Table 2 these are grouped according to height; the fig. shows height-month isopleths of % frequency up to 1500 m. Table 3 gives values at Vienna year by year. *Subject Headings:* **Temperature frequencies, Vienna, Austria.**—*C.E.P.B.*

2.5–103 551.524.7:551.575.1

Briggs, J., **Notes on the temperature at which radiation fog forms.** *Meteorological Magazine, London*, 79(942):343–346, Dec. **1950.** 2 photos, 2 tables. **MH-BH**—Examines relation between fog formation and temperature and humidity up to 5000 ft. at Mildenhall. Fog point corresponds fairly well to potential dew point at a level which increases with lapse rate. With uniform distribution of moisture, ground cooling leads to inversion of hydrolapse and diffusion downwards which causes fog. Forecasting rules given. *Subject Headings:* **Upper air temperatures, Fog formation, Fog forecasting.**

2.5–104 551.524.7(411)

Murray, R., **Unusually cold upper air temperatures for April.** *Meteorological Magazine, London*, 79(941):328–329, Nov. **1950.** fig. **MH-BH**—Records a temperature of −7°F. at 700 mb. at Leuchars, Scotland on April 25, 1950 and −35°F. at 550 mb. *Subject Headings:* **Upper air temperatures, Scotland.**

ATMOSPHERIC PRESSURE AND WIND

PRESSURE

2.5–105 551.543.2(43):551.582.1

König, W., **Die Januarsingularität im jährlichen Luftdruckgang Deutschlands in synoptischer Betrachtung.** [The January singularity in the annual pressure variation of Germany considered synoptically.] *Zeitschrift für Meteorologie*, 4(7–8):212–216, July–Aug. **1950.** 4 figs. **MH-BH**—Long period daily pressure means in Germany show a strong rise and fall Jan. 21–23, especially marked at Potsdam where it occurred 31 times in 1941–49. These are examined synoptically. A few were associated with advances of a N.E. or Finland anticyclone but most were due to a N.E. extension of Azores High. This is illustrated by surface and 500 mb. charts showing a deep, warm anticyclone bringing mild weather. Cause not clear but the singularity was poorly developed before 1890. *Subject Headings:* **Pressure variations, Climatology, Germany.**—*C.E.P.B.*

2.5–106 551.543.2:551.547

Lovera, Giuseppe, **Sull'andamento annuo della pressione atmosferica in relazione con l'altezza sul mare.** [On the annual march of atmospheric pressure in relation to altitude.] *Geofisica Pura e Applicata*, 17(3–4):218–220, Oct.–Dec. **1950.** table, refs., 7 equations. Italian and English summaries p. 218. **MH-BH**—The amplitude of the annual variation in pressure is computed by means of Fourier Series for 5 stations between 900 and 9600 ft. elevation on or near Monte Rosa and in Turin, Italy. The computed values are found to agree very well with observed values and with those found by CONRAD for 31 stations in the Alps and for Pikes Peak. *Subject Headings:* **Pressure variations, Mountain meteorology, Turin, Monte Rosa, Italy.**—*M.R.*

2.5–107 551.543.2(98)

Rodewald, Martin, **Zur Frage der Luftdruckverhältnisse in der Arktis.** [On the question of pressure conditions in the Arctic.] *Annalen der Meteorologie*, 3(9–10):284–290, **1950.** 5 figs., table, 7 refs. Summary in German and English p. 284. **MH-BH**—A comparative study of pressure north of 70°N. and its annual variation, as shown in the U. S. Normal Weather Maps (1946), Baur's unpublished charts and the distribution in 1949–50. The U. S. maps

show an excess up to 5 mb. over Baur; it is considered that Baur is correct and the U. S. maps greatly exaggerate the polar anticyclone. The U. S. values exceed Sverdrup's (1935) in all months. *Subject Headings:* **Pressure variations, Arctic.**—*C.E.P.B.*

WIND

2.5–108 551.551:551.524.4

Čadež, Marjan, **Vpliv turbulence na nastanek in razvoj inverzijter na razvoj ničstopinjskih izotermij.** [Influence of turbulence on the origin and development of inversions and the zero isotherm.] *Akademije Znanosti in Umetnosti v Ljubljani, Razprave*, 21(2):481–501, **1942.** 3 figs., 29 refs., 19 equations. Italian summary p. 496–500. **DWB**—The earlier theoretical work of MARGULES, WEGENER, KOSCHMIEDER, LETTAU, FINDEISEN, the author and others is reviewed in a systematic manner and applied to the mutual effect of turbulence in lapse rates, cloud formation, surface inversions and finally, the formation of the zero isotherm. The influence of snow falling through turbulent air prevents the formation of a well-defined zero isotherm such as would be found in stable air. *Subject Headings:* **Turbulence, Inversions, Zero isotherm, Change of state.**—*M.R.*

2.5–109 551.551

Lucke, O., **Bemerkungen zur Definition des Austauschtensors. I.** [Remarks on the definition of the exchange tensor. I.] *Zeitschrift für Meteorologie*, 4(7–8):216–222, July–Aug. **1950.** 2 figs., 11 refs., 34 equations. **MH-BH**—Author defines the austausch tensor for any property of air as the mean tensor product of the turbulent velocity and the vector along which that property retains its value. This agrees with G. I. TAYLOR if the turbulent flow is built up of limited cells of laminar flow, and with ERTELS if the time interval is limited. There follows a mathematical development under certain assumptions as to nonpersistent acceleration, leading to an evaluation of the persistence innate in variations of wind velocity, and to an expression connecting the austausch tensor with the most important observed magnitudes; it is proportional to the scatter matrix of the property. *Subject Headings:* **Austausch, Turbulent exchange.**—*C.E.P.B.*

2.5–110 551.553.21:551.577

†Lautensach, H., **Ist in Ostasien der Sommermonsun der Hauptniederschlagsbringer?** [Is the summer monsoon the chief source of precipitation in East Asia?] *Erdkunde*, 3(1):1–18, March **1949.** 3 figs., 6 tables, 92 refs. **DGS**—From an analysis of the literature on the summer rainfall of southern India and from personal observations in Korea, the author concludes that the summer monsoon is not the cause of rainfall in East Asia. The summer monsoon does not constitute a quasistationary air current, although southerly winds predominate. The monsoon consists of a Tm air mass originating in the north Pacific High and an Em air mass originating near the equator. At the polar front these air masses interact with two subpolar air masses but significant amounts of rainfall are not produced. The summer rainfall of East Asia has a threefold origin: 1) extratropical cyclones developing at the polar front are the principal source of rain (the moisture is derived ultimately from the Tm and Em air masses); 2) typhoons; 3) convective rain. The agricultural effect of the summer rainfall is discussed. A comparison between the summer rainfall of East Asia and that of the southeastern part of the United States is made. The article contains maps showing mean precipitation for July (1914–1933) and isohyets of amount of precipitation from July 11 to 27, 1924 in Korea. *Subject Headings:* **Monsoons, Precipitation, India, Korea.**—*I.L.D.*

2.5–111 551.553.8(411)

Champion, D. L., **Winter gales and Hebridean shipping.** *Meteorological Magazine, London*, 79(942):340–343, Dec. **1950.** 3 figs. **MH-BH**—Gales of winter 1948–49 were more severe and persistent than any year since 1936–37. Seasonal deviations from average shown for 6 stations, 1936–37 to 1948–49. *Subject Headings:* **Gales, Hebrides, Scotland.**

2.5–112 551.555.3:551.586.11

Berg, Hellmut, **Die Wirkung des Föhns auf den menschlichen Organismus.** [The action of föhns on human beings.] *Geofisica Pura e Applicata,* 17(3–4):104–111, Oct.–Dec. **1950.** 14 refs. In German, German and English summaries p. 104. **MH-BH**—A summary of knowledge and theories to date concerning the effect of the *Südföhn,* which is prevalent in the northern Alps, on the human body or nervous system. The fact that the pronounced disorders which accompany the onset of the föhn occur before the warm air reaches the surface, leads to the hypothesis that the effect is produced by pressure oscillations or else by radiation or electrical (ionization) phenomena. *Subject Headings:* **Föhn sickness, Nervous disorders, Mountain meteorology.**—*M.R.*

2.5–113 551.555.3

§Bossolasco, Mario, **Il foehn delle Alpi italiane.** [The föhn of the Italian Alps.] *Geofisica Pura e Applicata,* 17(3–4):142–166, Oct.–Dec. **1950.** 14 figs., 4 tables, 7 refs. Italian, English and German summaries p. 142–143. **MH-BH**—An analytical study of the frequency of and the synoptic conditions attending föhn winds in northern Italy, based on records at Milan, Turin and Moncalieri for 1929–1944. Many examples of pronounced föhn effects are described and illustrated by synoptic charts and barograph or hygrothermograph traces. The main features that appear on synoptic charts just prior to the onset of a föhn are a trough to the south or a low in the valley of the Po and a stagnant high to the N and a ridge to the W or NW. The predominant wind direction during a föhn is NW or W. A dry adiabatic lapse rate usually occurs in the upper air. *Subject Headings:* **Föhn winds, Lombardy, Italy.**—*M.R.*

2.5–114 551.555.3

§*Frey, Karl, **Der Dimmerföhn vom 18. Dezember 1945.** [The *Dimmerföhn* of Dec. 18, 1945.] *Geofisica Pura e Applicata,* 17(3–4):167–183, Oct.–Dec. **1950.** 16 figs. (incl. synoptic charts), 4 tables, 4 refs. German and English summaries p. 167. **MH-BH**—A detailed synoptic and dynamic study of conditions preceding and during the occurrence of a remarkable föhn in the Central Alps (Dec. 14–21, 1945). Observations at a number of stations along a N-S profile from Zürich to Lugano are presented graphically and in tables for the six stages of föhn development and decay, namely: 1) the north föhn, 2) anticyclonal, 3) south föhn, 4) *Dimmerföhn,* 5) föhn-end and 6) second south föhn stages. The author's theory of the origin of the *Dimmerföhn* is expounded. *Subject Headings:* **Föhn winds, Dimmerföhn, Alps, Switzerland.**—*M.R.*

2.5–115 551.555.4

Bouët, Max, **La vaudaire d'orage dans la vallée du Rhône.** [The thunderstorm *vaudaire* (wind) in the Rhone Valley.] *Geofisica Pura e Applicata,* 17(3–4):127–129, Oct.–Dec. **1950.** fig., ref. **MH-BH**—The nature of the *vaudaire,* a special type of cold katabatic wind which is peculiar to the Rhone Valley above Lake Geneva after thunderstorms, is described. An outstanding example which occurred on June 11–12, 1950 is studied and isobronts and winds shown on a chart of the region. Peak gusts were over 50 m.p.h. between 1 and 4 in the morning on June 12. This katabatic wind is not to be confused with the föhn which is very common here. *Subject Headings:* **Katabatic winds, Vaudaire, Rhone Valley, Switzerland.**—*M.R.*

2.5–116 551.557:551.588.2(649)

*Font Tullot, Inocencio, **Régimen de vientos superiores en Tenerife.** [The winds aloft at Tenerife.] *Revista de Geofisica,* Madrid, 8(32):486–506, Oct.–Dec. **1949.** 6 figs., 2 tables, refs. **DWB**—Cloud and surface observations made at an observatory 7000 ft. above sea level (Las Cañadas del Teide) from 1909–1915 and pilot balloon observations made at Izaña from 1916–1934 are analyzed to give seasonal wind roses up to 10 km., and a discussion included concerning the air circulation around and above Tenerife. *Subject Headings:* **Upper air winds, Wind roses, Orographic influences, Tenerife, Canary Islands.**—*M.R.*

2.5–117 551.557:551.509.67

Frith, R., **Wind shear revealed by artificial nucleation.** *Royal Meterological Society, Quarterly Journal,* 77(331):131–135, Jan. **1951.** 3 figs. **MH-BH**—On Jan. 25, 1950 a uniform

sheet of supercooled StCu over S.E. England was seeded with dry ice along a line at right angles to the wind. A rift was formed (composed of ice crystals) which divided into two and the separation increased progressively for an hour indicating a wind shear of about 10 m.p.h. Illustrated by photos. *Subject Headings:* **Upper air winds, Artificial precipitation, England.**

AQUEOUS VAPOR AND HYDROMETEORS

EVAPORATION

2.5–118 551.573:551.311.12

Garavel, M., **Observations glaciologiques: L'ablation en 1950 sur le Glacier de Sarenne.** [Glaciological observations: the ablation on the Sarenne Glacier in 1950.] *Geofisica Pura e Applicata*, 17(3–4):214–217, Oct.–Dec. **1950.** 2 figs., 4 tables. In French, English summary p. 214. **MH-BH**—Observations of ablation on the Sarenne Glacier during the summer of 1949 and 1950 were made by CHERREY. Results are tabulated and shown graphically. A comparison shows that there was much greater ablation of snow in June and ice in August of 1950 than in 1949, and therefore it is assumed that there was greater insolation and convection in 1950 than 1949. *Subject Headings:* **Ablation, Alps.**—*M.R.*

2.5–119 551.573:551.551:551.579.2

Köhler, Hilding, **On evaporation from snow surfaces.** *Arkiv för Geöfysik*, 1(8):159–185, **1950.** 8 figs., 5 tables, 8 refs., 35 equations. **DWB**—The theory of turbulent diffusion which controls evaporation from the ground is developed after TAYLOR, SUTTON and others. Curves are derived for determining evaporation as a function of wind and fetch. Observations made by the author from 1918–1925 at Haldde Observatory in northern Norway are tabulated and the turbulence and evaporation compared with theory. Sources of errors listed. Condensation also calculated for different wind directions. *Subject Headings:* **Evaporation of snow, Condensation, Norway.**—*M.R.*

2.5–120 551.573:551.578.46

Ostromeçki, Jerzy, **Parowanie okresu zimowego.** [Evaporation during the winter period.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, No. 1:58–65, April **1948.** 3 figs., 5 tables, refs. English summary p. 4. **DWB**—Evaporation a from a snow cover is plotted against relative humidity, temperature and saturation deficit d. The closest relation is given by a (mm) = 0.43 d (mm). *Subject Heading:* **Evaporation of snow.**—*C.E.P.B.*

2.5–121 551.573

Schmuck, Adam, **Przebieg dobowy parowania we Wrocławiu.** [The diurnal course of evaporation at Wroclaw.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, No. 1–4:72–78, **1949.** 4 tables, 5 refs. English summary p. 78. **DWB**—Evaporation of moisture from the ground was studied in 1947–1948 at the Wroclaw Meteorological Observatory by means of a Wild evaporimeter installed 50 cm. above the ground. Data are given on average total morning, afternoon and evening evaporation rates for June, July, August and Sept. and the total night evaporation for each day of these four months. The amount of moisture evaporated before 1300 o'clock is less than that evaporated after this hour. Evaporation during the night increases when a strong wind is blowing. *Subject Headings:* **Evaporation, Wroclaw, Poland.**—*I.L.D.*

2.5–122 551.578:551.578.4:551.311:125

†Troll, C., **Schmelzung und Verdunstung von Eis und Schnee in ihrem Verhältnis zur geographischen Verbreitung der Ablationsformen.** [Melting and evaporation of ice and snow in relation to the geographic distribution of ablation forms.] *Erdkunde*, 3(1):18–29, March **1949.** 2 figs., 41 refs. **DGS**—Ablation of ice and snow initiated by solar radiation is comprised of "covered" and "free" ablation. The former, as a result of heat conduction of the atmosphere and heat produced by condensation of water vapor gives rise to cryoconite wells, sand cones, etc.; the latter through direct evaporation forms true *nieves penitentes* and "honeycombed snow." The conditions of glaciers in high and moderate latitudes, where selective

melting ablation prevails so that cryoconite wells and melting cones predominate, are described. In moderate latitudes and in tropical and subtropical mountains, ablation through direct evaporation predominates so that various forms of *nieves penitentes* occur. The distribution of *nieves penitentes* and the regional factors involved in their formation in the Argentine and Chilean Cordilleras, in the tropic Andes, in Mexico and North America, in the Hawaiian Islands, in the Mediterranean region, in Asia (China, India) and in moderate latitudes (eastern United States, Alps) are described in detail. *Subject Headings:* **Ablation, Evaporation.** —*I.L.D.*

2.5–123 551.573

Yamamoto, G. and Miura, A., **Evaporation by natural convection.** *Meteorological Society of Japan, Journal, 2nd Ser.*, 27(11):342–345, Nov. **1949.** 3 figs., 5 refs., 12 equations. In Japanese, English summary p. 37. **MH-BH**—A theoretical formula was developed for evaporation from a finite pan. For pan of radius 1.83 cm. it gives 0.359 $(\theta_0-\theta_\infty)^{\cdot 25}$ (C_0-C_∞) where θ_0; θ_∞, C_0C_∞ are temperatures and vapor concentrations at water surface and in air. Experimental check gave constant as 0.296. *Subject Heading:* **Evaporation.**—*C.E.P.B.*

CLOUD PHYSICS AND ICING

2.5–124 551.574.1

Hosler, C. L., **Preliminary investigation of condensation nuclei under the electron microscope.** *American Geophysical Union, Transactions*, 31(5), Pt. 1:707–710, Oct. **1950.** 3 figs., table, 7 refs. **DWB**—Droplets condensed on atomized sodium chloride in an expansion chamber gave very large numbers of small nuclei (24% $1–2\times10^{-6}$ cm.) on the collecting surface. Average count 76×10^6/cc. compared with 2×10^5 with Aitken counter, which misses the smaller nuclei. These small nuclei may be important in condensation. *Subject Headings:* **Condensation nuclei, Nuclei count.**—*C.E.P.B.*

2.5–125 551.574.1:551.576

†Perrie, D. W., **Cloud physics.** New York, John Wiley and Sons, **1950.** 119 p. 7 figs., 30 plates, append. with 3 tables, glossary, biblio. p. 109–114. **DWB**—An excellently illustrated and readable book on many aspects of cloud forms, cloud formation and cloud physics. Chapters on condensation and sublimation nuclei, natural and artificial precipitation, cloud observation and forecasting, effects of clouds on aviation, optical and electrical phenomena associated with clouds, and clouds in the stratosphere (noctilucent and nacreous clouds) are none too technical for the ordinary layman to understand. There is a good guide to cloud identification and an unannotated bibliography of over 100 references. *Subject Headings:* **Cloud formation, Cloud classification, Cloud physics.**—*M.R.*

2.5–126 551.574.1

Rodebush, W. H., **General properties of aerosols.** (In **Handbook on aerosols.** Washington, D. C., U. S. Office of Scientific Research and Development, National Defense Research Committee, **1950.** p. 60–63. 3 figs.) **DWB**—Aerosols are small particles in a gaseous medium. Article discusses stability (evaporation, settling, thermal diffusion) and coagulation (concentration exceeding 10^7 particles per cc. not stable); formation of aerosols as natural fogs of droplets on salt or dust, and artificial formation by condensation of a jet of vapor or by combustion. Removal by filtration or centrifugal action, optical properties, smoke screens is also treated. *Subject Heading:* **Aerosols.**—*C.E.P.B.*

2.5–127 551.574.1

Sinclair, David, **Stability of aerosols and behavior of aerosol particles.** (In **Handbook on aerosols.** Washington, D. C., U. S. Office of Scientific Research and Development, National Defense Research Committee, **1950.** p. 64–76. 3 figs., 32 refs. p. 144–145, 47 equations.) **DWB**—A mathematical discussion of settling of airborne particles under gravity (uniform and heterogeneous aerosols), Brownian motion and coagulation and removal by combined coagulation and settling. Other points discussed are electrical charges, thermal separation, coagulation by sonic and supersonic vibration, including experiments on clearing. *Subject Heading:* **Aerosols.**—*C.E.P.B.*

2.5–128 551.574.1:535.4/5

Sinclair, David, **Optical properties of aerosols.** (In **Handbook on aerosols.** Washington, D. C., U. S. Office of Scientific Research and Development, National Defense Research Committee, **1950.** p. 81–96. 13 figs., 14 refs. p. 145, 22 equations.) **DWB**—Article opens with a discussion of scattering of light by a spherical particle in terms of radius, wave length and refractive index. Then follows discussion of refraction (color effects), polarization, total scattering and transmission by a cloud of uniform particles and sections on non-uniform aerosols and scattering by particles which also absorb. *Subject Headings:* **Aerosols, Scattering of light.** —*C.E.P.B.*

2.5–129 551.574.1:551.576.11:551.578.1

Smith, E. J., **Observations of rain from non-freezing clouds.** *Royal Meteorological Society, Quarterly Journal,* 77(331):33–43, Jan. **1951.** 3 figs., 3 tables, 13 refs. **MH-BH**—Definite observations of rain from clouds above 32°F. were made in three aircraft flights near Sydney, Australia, and by radar; radiosondes were also available. In the first, moderate or heavy rain fell from a cumulus ridge penetrating StCu. Temperature outside peak of cloud (10,000 ft.) 6°C. The cloud was very wet and non-turbulent, no ice was seen and radar suggested many large drops near the top. In the second, light rain fell from a cu. ridge, top at 8,400 ft. at 1°C. Observations of drop size and density made. In the third, moderate to heavy rain fell from a cu. cloud with top about 11,000 ft., 6°C. Radar observations within the cloud showed raindrops. *Subject Headings:* **Condensation nuclei, Radar observations, Rain from nonfreezing clouds, Cloud dissolution.**

2.5–130 551.574.1

Tsuji, M., **On the saturated vapour pressure of small drops of aqueous solution.** *Meteorological Society of Japan, Journal, 2nd Ser.,* 27(11):345–350, Nov. **1949.** 2 figs., 6 refs., 9 equations. In Japanese, English summary p. 37. **MH-BH**—Author calculates theoretically the relation between radius of a small drop of a given concentration of a salt and the vapor pressure at its surface. Results shown graphically. *Subject Headings:* **Vapor pressure, Drop properties.**—*C.E.P.B.*

2.5–131 551.574.4

*Antonik, Bertold, **Die Häufigkeit des Vorkommens von Tau und Reif nach den Potsdamer Beobachtungen.** [The frequency of occurrence of dew and rime from Potsdam observations.] *Zeitschrift für Meteorologie,* 5(2):52–55, Feb. **1951.** 6 tables, 3 refs. **MH-BH**—Mean frequency of dew during 1936–1948 was 140 days (Jan.1.7, Sept.22.9), rime 1901–48 was 45 days. Causes and definitions discussed; special cases are frozen dew and "fog-dew." *Subject Headings:* **Dew, Rime, Potsdam.**—*C.E.P.B.*

2.5–132 551.574.41(569.4)

*Shalem, Nathan, **La rosée en Palestine.** [Dew formation in Palestine.] *La Météorologie,* 4th Ser., No. 19:182–186, July–Sept. **1950.** 3 figs., fold. table. French, English and Spanish summaries p. 182. **DWB**—Dew is as important as rain in the agriculture of Palestine and the Levant since dew occurs most frequently in the dry season. Factors which control dew formation are discussed. Regional distribution of amount and frequency of dew in Palestine, Transjordan, etc. is given by months, by seasons and for the year. October is the month with minimum of amount and number of days with dew throughout the area and late spring the time of maximum, as a rule. *Subject Headings:* **Dew, Palestine.**—*M.R.*

2.5–133 551.574.42:533.6.07

Brun, Edmond, **Considérations sur la réalisation d'une soufflerie de givrage artificiel.** [Considerations on the construction of a wind tunnel for producing artificial rime.] *France, Centre National de la Recherche Scientifique, Journal des Recherches,* No. 4–5: 1–4, **1948.** 7 figs., 2 refs. **MH-BH**—A discussion of the problems encountered in constructing a wind tunnel of the reciprocating type having a length of 24 m., a velocity of 100 m./sec., a rectangular tunnel of dimensions 0.9×1 m.^{2}, a contraction and a coefficient of 85 percent and capable of attaining a temperature of -20°C. Solutions presented comprise direct contact between droplets of brine and air, preventing deposition of rime upon blading by having two groups of

identical bladings that can be substituted for each other, etc. A diagram of the experimental wind tunnel of reciprocal type is presented. *Subject Headings:* **Wind tunnels, Icing machines, Rime formation.**—*I.L.D.*

2.5–134 551.574.42:533.6.07

Plan, Max, **Note annexe sur le calcul du ventilateur.** [Additional note on the calculation of a ventilator.] *France, Centre National de la Recherche Scientifique, Journal des Recherches*, No. 4–5: 13–16, **1948.** 22 figs., equations. **MH-BH**—A theoretical application of the turbulence theory of a propeller, developed by N. E. Zhukovskiĭ, to the construction of a helicoidal fan. It is concluded that a fan with upstream directed blading is superior to an isolated propeller or to a propeller combined with a downstream rectifier. The modifications of the theoretical calculations needed in constructing a wind tunnel for producing rime of the type described by M. Stroesen (*ibid.*, No. 4–5, p. 17–25, 1948) are described. *Subject Headings:* **Wind tunnels, Rime formation.**—*I.L.D.*

2.5–135 551.574.42:533.6.07

Stroescu, M., **Réalisation d'une maquette de soufflerie de givrage aux laboratoires de Bellevue.** [Model of a wind tunnel producing rime constructed at the Bellevue Laboratories.] *France, Centre National de la Recherche Scientifique, Journal des Recherches*, No. 4-5: 5–13, **1948.** 20 figs., **MH-BH**—The author discusses the structural and functional conditions that must be considered in constructing a model (to the scale of one third) of the wind tunnel for producing artificial rime described by E. Brun (*ibid.*, No. 4–5, p. 1–4, 1948). Diagrams and descriptions of the circuit and of the tunnel with its various parts are presented. Also photographs of the actual model and of its various parts are given. The model, when tested, showed a velocity of 60 m./sec. and an even flow to all points in the tunnel, and a coefficient of contracting of 20. *Subject Headings:* **Icing machines, Wind tunnels, Rime formation.**—*I.L.D.*

2.5–136 551.574.4:551.509.3

*Kline, Dwight B. and Walker, Joseph A., **Meteorological analysis of icing conditions encountered in low-altitude stratiform clouds.** *U. S. NACA, Technical Notes* 2306, March **1951.** 27 p. 6 figs., 3 tables, 12 refs. **DWB**—Observations of icing conditions encountered during the winters of 1948–49 and 1949–50 and detailed data for 4 years of research into the vertical and horizontal extent of supercooled stratiform clouds, are presented in tables and discussed. The most important points discovered were: 1) liquid water content was less in clouds of greater horizontal extent and vice versa; 2) icing was most likely in westerly portion and least likely in easterly portion of a cyclone; 3) icing is less likely when precipitation is falling and more likely in nonprecipitating clouds. Maximum vertical depth of icing was 6500 ft. Eighty percent of cases were <4000 ft. thick. *Subject Headings:* **Icing in clouds, Icing forecasting, United States.**—*M.R.*

PRECIPITATION

2.5–137 551.577

§Belger, Wilhelm, **Der Grosstadteinfluss auf nichtstationäre Regenfronten und ein Beitrag zur Bildung lokaler Wärmegewitter.** [City influence on non-stationary rain fronts and a contribution to the formation of local heat thunderstorms.] Cologne, Orthen, **1940.** 69 p. figs., refs., equations. Inaug.-Diss.—Berlin. **DLC**—Four cases of heavy cold-frontal rain (one with thunder and hail) in the Berlin area are analyzed in great detail, with many charts and diagrams to determine whether a large city has any effect on the intensity, duration, amount of rain or the shape of the front. Synoptic charts for Central Europe and local isohyetal charts, based on dozens of stations in the Berlin area, substantiate this investigation. Significantly two of the four cases showed a marked urban influence: the maximum rainfall was over the city center. In one case the opposite was true. Aerological soundings into Berlin are shown for the hail situation on April 29, 1934. *Subject Headings:* **Precipitation, Urban influences, Thunderstorms, Hail, Berlin, Germany.**—*M.R.*

2.5–138 551.577:63

Braun, Otto, **La irregularidad de las precipitaciones y la agricultura.** [Irregularity of precipitation as affecting agriculture.] *Nimbus*, 2(5):34–36, Jan.–March **1950.** **MH-BH**—

Generalities on the relation between rainfall and crop production (wheat, corn, cotton, sugar cane, sorghum, alfalfa) with special reference to conditions in Bolivia, both at high elevation (altiplano) and in the tropical portions. *Subject Headings:* **Precipitation, Agricultural meteorology, Bolivia.**—*M.R.*

2.5–139 551.577

*du Chaxel, R., **La pluie à Dakar.** [Rain at Dakar.] *La Météorologie*, 4th Ser., No. 19:153–170, July–Sept. **1950.** 7 tables, equations. French, English and Spanish summaries p. 153. **DWB**—Data for Dakar for the period 1901–1940 are analyzed statistically to show the normal and standard variations in monthly and annual totals and in number of days with rain. The frequencies or probabilities of rain or rainy days are calculated from the actual monthly totals for the 40 year period. Extreme values (both wet and dry) are listed and tested for randomness. Persistence of rainy days and of the "rainy season" is also tested statistically. *Subject Headings:* **Precipitation, Rainfall data, Dakar, West Africa.**—*M.R.*

2.5–140 551.577

Gorczyński, Wladyslaw, **Dzielnik opadowy i metody jego obliczania.** [Precipitation ratio and its computation.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, No. 1–4:42–59, **1949.** 4 tables, 10 refs., 4 equations. English summary p. 58. **DWB**—The precipitation ratio, defined by W. Gorczyński, "is the ratio of the difference between the maximum annual precipitation and its minimum value to the mean for the number of years of record." To obtain comparable results for varying periods of time the value, corresponding to each length of record used, is corrected to a constant standard length by a method devised by G. F. McEwen. The precipitation ratio is calculated by using three maxima and three minima. The annual precipitation for Warsaw during the period 1811–1940 and the quotients and precipitation ratios for periods of 10, 50, 100 and 130 years are tabulated. The best method for obtaining comparable results is that of making averages for successive 20 or 10 year periods. *Subject Headings:* **Precipitation ratios, Warsaw.**—*I.L.D.*

2.5–141 551.577.1

Houghton, Henry G., **A preliminary quantitative analysis of precipitation mechanisms.** *Journal of Meteorology*, 7(6):363–369, Dec. **1950.** 5 figs., 2 tables, 10 refs., 2 equations. **MH-BH**—This is a quantitative study of the growth of precipitation from particles of cloud element size to precipitation elements by the ice crystal method and by the process of gravitational accretion. Diffusion of water vapor to ice crystals was calculated by the steady-state diffusion equation of Jeffreys. The principle of growth of drops by accretion and a method for calculating rate of growth are discussed. The results of computation of rate of growth of precipitation elements by both methods are presented graphically. It is found that the ice crystal mechanism is much more rapid than the accretion process in the early stages of growth of the precipitation elements and that the accretion process is more effective when the cloud elements have a mass of the order of magnitude of at least ten micrograms. On the basis of an analysis of the size allowed by precipitation elements, it is concluded that in mid latitude conditions rain drops are produced by the combined effect of the ice crystal and accretion processes. In low latitudes the size of the rain drops can be explained by accretion alone. *Subject Headings:* **Precipitation formation, Precipitation mechanism.**—*I.L.D.*

2.5–142 551.577.2(861) 551.582(861)

Brückner, Werner, **Weather observations in Colombia.** *Weather*, 6(2):54–58, Feb. **1951.** fig., 2 plates, 2 tables. **DWB**—Account of the climate of Colombia, South America, and especially the local distribution of rainfall in relation to convective clouds. A cross section shows the vertical currents and cloud forms, morning, afternoon and evening. *Subject Headings:* **Precipitation distribution, Climatology, Colombia, South America.**

2.5–143 551.577.2:631(54)

Ramdas, L. A., **Rainfall and agriculture: use of routine rainfall reports for crop outlooks.** *Indian Journal of Meteorology and Geophysics*, 1(4):262–274, Oct. **1950.** 7 figs., 2 refs. **DWB**—India is divided into 30 regions and the rainfall characteristics of the 75-year period 1875–1949

presented in a simple graphic form which brings out the drought and flood years in each region at a glance. The duration of the droughts and floods in weeks throughout the year, for each region, is shown on another simple chart. The latter shows the variability of the monsoon from year to year and from place to place, for the aid of the agriculturist. *Subject Headings:* **Rainfall distribution, Monsoon rains, Agricultural meteorology, India.**—*M.R.*

2.5–144 551.577.2(969) 551.509.54:63

Riehl, Herbert, **Some aspects of Hawaiian rainfall.** *American Meteorological Society, Bulletin*, 30(5):176–187, May **1949.** 17 figs., 4 tables, 10 refs., 2 equations. **MH-BH**—Effective rainfall in sugar and pineapple districts is defined as daily rainfall exceeding 0.10 inch; it was studied at 21 stations over a relatively small area during 1937–47. Seasonal and annual distribution is charted; 50–90% is due to widespread "rainstorms"; scatter distribution of intensity of these rainstorms is studied by medians of 21 stations. These rainstorms depend on movement of convection cells related to synoptic disturbances, especially in winter. Application of modern forecasting methods for low latitudes is possible, with nomogram applications to individual plantations, but this question is not pursued. *Subject Headings:* **Precipitation, Methods of forecasting, Agricultural meteorology, Oahu, Hawaiian Islands.**—*C.E.P.B.*

2.5–145 551.577.2:551.588.2

Striffling, Maurice, **Étude synoptique des précipitations alpines.** [Synoptic study of Alpine precipitation.] *Geofisica Pura e Applicata*, 17(3–4):130–135, Oct.–Dec. **1950.** 2 figs., 6 refs. In French, English summary p. 130. **MH-BH**—A brief survey is made of recent literature dealing with the effect of mountains on meteorological elements, from a synoptic point of view. Since rainfall is the element which is measured in greatest detail areally (in mountain regions), a system of studying the synoptic rainfall patterns in the French Alps is devised and illustrated. After the daily rainfall is plotted on large maps and areas with various amounts (6 groups) colored according to the scale devised, the relation of the patterns to the 700, 500 and 300 mb. circulation is studied. Two hundred and forty-six charts were prepared for the period from Jan. 1946 to Jan. 1948. *Subject Headings:* **Mountain meteorology, Synoptic climatology, Precipitation distribution, Alps.**—*M.R.*

2.5–146 551.577.2(52)

*Yoshida, S., **On the rainfall distribution of Mt. Iwate.** *Journal of Meteorological Research*, Tokyo, Vol. 2, Suppl. No. p. 90–92, Aug. **1950.** 3 figs. In Japanese, English summary p. 109. **DWB**—Mt. Iwate is 2041 m. high. Author measured rainfall at 15 different points under various synoptic situations. In heavy rain, maximum lies at height of 1200 m. *Subject Headings:* **Precipitation distribution, Mt. Iwate, Japan.**—*C.E.P.B.*

2.5–147 551.577.21(431)

Maede, Hans, **Strömungsdivergenz als Ursache für die Niederschlagsarmut der südlichen Ostseeküste.** [Wind divergence as a cause of the low rainfall of the southern Baltic coast.] *Zeitschrift für Meteorologie*, 5(1):26–30, Jan. **1951.** 2 figs., 10 refs. **MH-BH**—Fig. 1, mean Dec.–Feb. rainfall, shows a deficiency of 15% on coast compared with hinterland. Various authors give different explanations. Especially marked over the Gulf of Lubeck, with a mean wind 230°, 5–6 m./sec. This effect is partly due to wind-swept exposure of gages; but it is mainly due to association of rain with west weather types, owing to lee effects and the divergence of winds off the land caused by decreased friction over the sea. This is especially effective in warm fronts as shown by mean rainfall on 8 such days. In other seasons divergence is less effective. *Subject Headings:* **Precipitation distribution, Lee effects, Baltic Coast.**—*C.E.P.B.*

2.5–148 551.577.3:63(54)

Ramdas, L. A., **Rainfall of India: a brief review.** *Indian Journal of Agricultural Science*, 19(1):1–19, March **1949.** 7 figs., 5 tables. Reproduced from *Empire Journal of Experimental Agriculture*, 14(54), April 1946. **DWB**—A general treatment of the rainfall regime of various parts of India. Effect of relief on monsoon, comparison of seasonal variations in 30 regions, date of establishment of monsoon in various years and places (1891–1943), years of flood and

drought in 31 regions (1875–1944), occasions of excessive rainfall, inter-regional correlations and analysis of variance of rainfall between 20 randomly selected stations are discussed and illustrated. The effects of rainfall on agriculture are emphasized. *Subject Headings:* **Precipitation variations, Agricultural meteorology, India.**—*M.R.*

2.5–149 551.577.33:523.73

Fraselle, E., **Le cycle de pluviosité de 27 (27,0074) jours. Les derniers résultats.** [The rain cycle of 27 (27.0074) days. Final results.] *Belgium, Institut Royal Colonial Belge, Bulletin des Séances*, 21(1):245–247, **1950.** tables, 2 refs. **DWB**—Author finds a cycle of 27 days in rainfall of Shangugu (Lake Kivu) 1946–49. *Subject Headings:* **Precipitation, Cycles, Lake Kivu, Belgian Congo.**

2.5–150 551.577.36(52)

Kurashige, K., **On the amount of precipitation at Mizusawa.** *Journal of Meteorological Research*, Tokyo, Vol. 2, Suppl. No. p. 105–107, Aug. **1950.** 4 figs., 2 tables. In Japanese, English summary p. 109. **DWB**—Frequency of daily rainfalls from 30–260 mm. at Mizusawa is examined statistically. Frequencies of amounts up to 100 mm. are fitted by a logarithmic formula, and above that amount by an exponential. An amount exceeding 300 mm. in a day is expected to occur once in 50 years. *Subject Headings:* **Precipitation frequencies, Mizusawa, Japan.**—*C.E.P.B.*

2.5–151 551.577.37(52)

*Sato, Y., **On the heavy rains in Miyagi Prefecture.** *Journal of Meteorological Research*, Tokyo, Vol. 2, Suppl. No. p. 65–89, Aug. **1950.** 10 figs., 13 tables, 132 charts p. 75–89. In Japanese, English summary p. 109. **DWB**—Hundred and thirty-two rainfall charts are prepared for days in 1897–1949 having more than 100 mm. rain. The characteristics of geographical distribution of these cases are discussed; the frequency distribution of various amounts, represented by formulas of the type $ab^{x/c}$, and periodicity, are discussed. (Apparently a periodicity of 3 years predominates.) The importance of these studies for flood forecasting is noted. *Subject Headings:* **Excessive precipitation, Flood forecasting, Miyagi Prefecture, Japan.**—*C.E.P.B.*

2.5–152 551.577.36/7

Seelye, C. J., **The frequency of heavy daily rainfalls in New Zealand.** Sixth Pacific Science Congress 1947, Proceedings. *Royal Society of New Zealand, Transactions*, 77(5):66–70, Nov. **1949.** 2 figs., tables, 3 refs. **DLC**—Frequency of a daily amount x in N years is expressed by $x = u + k \log N$ and related to Gumbel's formula for extremes. Values of u and k are given for 37 stations. Maps of daily rainfall, equalled or exceeded once in one and ten years, are given. The standard errors of u and k are stated; the method is tested and found to be reasonably accurate.—*Subject Headings:* **Precipitation frequencies, New Zealand.**—*C.E.P.B.*

2.5–153 551.578.42(432)

Koch, H. G., **Der ungewöhnlich starke Schneefall vom 26.2.1950 in Mitteldeutschland.** [The unusually heavy snowfall of 2,26,1950 in central Germany.] *Zeitschrift für Meteorologie*, 5(2):48–52, Feb. **1951.** fig., 5 refs. **MH-BH**—Feb. 1950 had record Feb. precipitation in Halle-Leipzig plains and Thuringia basin. A large part fell as snow on 26th, up to 60.3 mm. water at Blankenhain (map) in a typical NW weather distribution, with blocking by a cold air mass trapped to windward of the mountains. *Subject Headings:* **Snowfall extremes, Central Germany.**—*C.E.P.B.*

2.5–154 551.578.46

*Steinhauser, F., **Untersuchungen über die Schneedeckenverhältnisse im Hochgebirge nach Beobachtungen auf der Grossglockner-Hochalpenstrasse. (Vorläufige Mitteilung.)** [Research on the snow cover conditions in the high ranges based on observations in the Grossglockner-Hochalpenstrasse. (Preliminary report.)] *Geofisica Pura e Applicata*, 17(3–4):183–198, Oct.–Dec. **1950.** 3 figs., 6 tables, 3 refs. German and English summaries p. 183–184.

MH-BH—A mass of detailed data is presented in tables and charts to show nature of variations in snow depth along the Grossglockner Highway during the ten-year period 1936–46. Over 400,000 observations were analyzed from which it was concluded that estimates of snow cover from measurements made at one station would be erroneous, as relationships change from time to time between depths at nearby measuring points. Best estimates can be obtained from profiles based on a number of depth measurements in an area. *Subject Headings:* **Snow cover, Mountain meteorology, Snow surveys, Austria, Alps.**—*M.R.*

HYDROMETEOROLOGY

2.5–155 551.579

Barnes, T. A., **Scientific approach to underground water problems—1.** *Commonwealth Engineer*, Melbourne, 37(10):411–413, May **1950.** 3 figs. **DLC**—A general discussion of the hydrologic cycle is given. Related schematic diagrams and charts and a definition of terms used in treating atmospheric and underground water movements are included. *Subject Headings:* **Hydrologic cycle, Underground water, Australia.**—*M.R.*

2.5–156 551.579

Coutagne, Aimé, **En marge de quelques documents récents concernant l'Hydrologie Algérienne.** [Notes on some recent documents concerning the hydrology of Algeria.] *Revue Générale de l'Hydraulique*, No. 50:3–7, March–April **1949.** Reprint available. **DWB**—Notes on: 1) **Hydrologie Algérienne,** a summary of rain and river observations 1924–46, in 15 Algerian basins (with formulas relating runoff to rainfall); 2) **Annuaire hydrologique,** no. 1, 1946–1947; 3) **Les problèmes de l'eau en Algérie,** a study of Algerian geology, meteorology and hydrology. *Subject Headings:* **Hydrology, Precipitation, Algeria.**—*C.E.P.B.*

2.5–157 551.579

Dębski, Kazimierz, **Parowanie terenowe i jego gradient poludnikowy na ziemiach niżu sarmackiego.** [Soil evaporation and its meridional gradient in the Sarmatian lowland.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, No. 1:21–29, April **1948.** 4 figs., 3 tables, ref., 2 equations. French and English summaries p. 3. **MH-BH**—Relations between rainfall and runoff for three river basins are shown in tables and graphs and differences are related to the latitude. *Subject Headings:* **Hydrologic cycle, Poland.**—*C.E.P.B.*

2.5–158 551.579

Hernández, Haydée, **Ciclo meteorológico.** [Meteorological cycle.] *Nimbus*, 2(5):24–25, Jan.–March **1950.** 2 figs. **MH-BH**—A brief article on the hydrologic cycle with some schematic illustrations. *Subject Heading:* **Hydrologic cycle.**

2.5–159 551.579:06

Hydrological Commission, abridged final report, 1st session at Toronto, Canada from 4th to 16th August 1947. *Organisation Météorologique Internationale, Publication* No. 64, **1949.** 18 p. In English and French. **DWB**—The first session of the Hydrological Commission passed eight resolutions dealing with terms of reference for the Hydrological Commission, relations with the Hydrological Association of the International Union of Geodesy and Geophysics, the relation in each country between the hydrologic and meteorological services, international cooperation on common hydrologic regions, and support for a hydrological bibliography and glossary. Resolutions are given in English and French. There follows a list of total membership, and also a photograph identifying those members attending this session. *Subject Headings:* **I.M.O. publications, Toronto Conference of 1947, Hydrological Commission.**—*G.C.B.*

2.5–160 551.579

Penman, H. L., **The water balance of the Stour catchment area.** *Institution of Water Engineers, Journal*, 4(6):457–469, **1950.** 3 figs., 5 tables. **DLC**—The author's method of estimating evaporation from the soil is described. This estimate takes into account the energy available for evaporation, potential transpiration and limited range of root action. Month

by month changes of stored water are estimated from measured rainfall and run-off and estimated evaporation. A water balance for 1942–43 is worked out from average weather data for the catchment. Calculated mean monthly and annual storages are compared with well levels. *Subject Headings:* **Hydrologic cycle, Catchment basins.**—*C.E.P.B.*

2.5–161 551.579

Polli, Silvio, **Sul sistema: precipitazione—ghiaccio—deflusso.** [On the cycle: precipitation, ice, runoff.] *Geofisica Pura e Applicata*, 17(3–4):221–223, Oct.–Dec. **1950.** Italian and English summaries p. 221. **MH-BH**—General concepts of mountain hydrology, bringing out the 3 types of cycles: 1) precipitation—runoff, 2) precipitation—snow—runoff, and 3) precipitation—ice—runoff. The latter cycle is the most conservative and insures a nearly normal runoff for many years, wherever a good portion of the water supply comes from ice. *Subject Headings:* **Hydrologic cycle, Glacial runoff.**—*M.R.*

2.5–162 551.579(02)

Richards, Bertram Darell, **Flood estimation and control.** London, Chapman and Hall, **1950.** 173 p. 44 figs., 37 tables, equations, 3 append. **DWB**—A highly concentrated theoretical and practical text for students of reclamation, engineering, hydrology and, especially, hydrometeorological analysis and forecasting. Specific formulas are given for estimating flood intensity, duration and discharge, as devised by 12 different authorities. The unit hydrograph and probability methods are discussed separately. There follow empirical curves and tables on rainfall intensity, as a function of area and time, which cover 5 places: India, Eastern U.S.A., West Australia, South Rhodesia and the British Isles. Separate chapters discuss formulas for peak flood time, intensity and runoff, coefficients of flood estimation, flood hydrographs, effects of rainfall variation on flood hydrograph, flood control and soil erosion; many examples and nomograms are included. Finally, an actual case is worked out in detail. *Subject Headings:* **Flood control, Hydrometeorology, Textbooks.**—*M.R.*

2.5–163 551.579:551.482

Steinhäusser, Hans, **Der Jahresgang des Wasserhaushaltes südalpiner Flussgebiete.** [The annual variation of the water economy of south Alpine river basins.] *Meteorologische Rundschau*, 3(11–12):243–247, Nov.–Dec. **1950.** fig., 5 tables, 14 refs., 2 equations. **MH-BH**—In a short period precipitation equals runoff+evaporation±stored water retained or given up. Over a series of years the last can be neglected. Average figures are given for 4 rivers and the differences of evaporation discussed. The annual variations of precipitation and of runoff +evaporation are then compared to show months of accumulation and discharge of stored water. Differences between different basins are partly climatic, partly topographic and geological. Finally, storage as snow is discussed; the total yield of stored water is smaller than that from snow, showing that some snow water is retained in the ground. *Subject Headings:* **Hydrologic cycle, River basins, Alps.**—*C.E.P.B.*

2.5–164 551.579 551.49

Stenz, Edward, **Sieć wodna w Afganistanie.** [Water resources in Afghanistan.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, No. 1–4:32–41, **1949.** 2 figs., 12 refs. English summary p. 32–41. **DWB**—The author discusses the past and present glaciation in Afghanistan, drainage areas, individual rivers and their discharge, and the lakes. *Subject Headings:* **Water resources, Hydrology, Afghanistan.**—*I.L.D.*

2.5–165 551.579.1:551.577.2:621.3

Bocks, Shirley J., **Rainfall, runoff and power with special reference to Ceylon.** *India, Central Board of Irrigation Journal, Simla*, 7(2):194–198, March **1950. DGS**—Quantitative but brief treatment is given to the rainfall and evaporation over the earth, the energy in storms and rain, the pressure exerted and the power delivered by rain drops, and the application to rainfall, runoff, hydroelectric power and erosion in Ceylon. *Subject Headings:* **Precipitation, Runoff, Hydrologic cycle, Ceylon.**—*M.R.*

2.5–166 551.579.1:551.577.37:621.3

Mookerjea, D., **Anti soil erosion experiment at Arabari—West Bengal.** *India, Central Board of Irrigation Journal*, Simla, 7(2):191–193, March 1950. 2 figs. **DGS**—During 1948 rainfall records were obtained at the site of an experimental plot in eroded country which would later be reforested, to determine rainfall—runoff erosion relationships. It was found that the more intense storms produced the greatest percentage of runoff and of eroded soil. Regression equations expressing runoff and erosion as functions of the amount and intensity of rain were obtained. These results will be compared with those obtained after the land has become forested. *Subject Headings:* **Soil erosion, India.**—*M.R.*

2.5–167 551.579.2

Miller, Stanley A., **Some snow-melt runoff characteristics.** *American Geophysical Union, Transactions*, 31(5), Pt. 1:714–745, Oct. 1950. Discussion by Bertram S. Barnes, p. 746–749. 8 figs., 7 refs. **MH-BH**—A graphical relation is established between the accumulated degree-days above 32°F. in the Big Horn River Basin and the runoff of snow melt-water, after allowing for flood runoff. This relation is also applied to the Yellowstone River. *Subject Headings:* **Snow melting, Runoff, Wyoming.**—*C.E.P.B.*

2.5–168 551.579.4(44)(09)

Bidault-de-l'Isle, G., **La météorologie régionale et les crues de l'Yonne avant le XX^e siècle.** [Regional meteorology and floods of the Yonne before the 20th century.] *La Météorologie*, 4th Ser., No. 19:187–197, July–Sept. 1950. French, English and Spanish summaries p. 187. **DWB**—The main floods of the Yonne since first mentioned in literature or chronicles (583 A.D. to 1897) are cited. The effect of the Yonne and the Marne on the Seine is briefly discussed. *Subject Headings:* **Floods, History, Yonne River, France.**—*M.R.*

2.5–169 551.579.4:551.577.33:523.74

Fraselle, E., **Le problème des cycles hydrographiques et climatologiques du Bassin de la Kagera (Victoria-Nyanza).** [The problem of hydrographic and climatological cycles in the Kagera Basin (Victoria-Nyanza).] *Belgium, Institut Royal Colonial Belge, Bulletin des Séances*, 21(1):235–244, 1950. tables, 10 refs. **DWB**—Variations of level of Victoria Nyanza are closely related to rainfall variations in the basin, with a lag up to a year. There are periodicities of 11 and 23 years in lake level and less definitely in Nile level. The author forecasts rainfall of any year as the mean of 11th and 23rd preceding year, and of any month as the mean of the 138th and 273rd preceding month. *Subject Headings:* **Hydrography, Climatology, Cycles, Water level variations, Lake Victoria, East Africa.**—*C.E.P.B.*

CLIMATOLOGY AND BIOCLIMATOLOGY

CLIMATOLOGY

2.5–170 551.58:06

Climatological Commission, abridged final report, 6th session at Toronto, Canada from 4th to 25th August 1947. *Organisation Météorologique Internationale, Publication* No. 67, 1949. 68 p. In English and French. **DWB**—The 32 resolutions passed by the Climatological Commission are given in both English and French. Recommendations were made for a directory of stations, official resort data, regular inspection of stations, and establishment of solar radiation stations. Codes and standards were set up for the international broadcast of monthly climatic data. Publication of annuals, resumption of Réseau Mondial, continuation and expansion of World Weather Records, publication of a bibliography and compilation of a multilingual dictionary were recommended. The use and exchange of data on punched cards for surface and upper air data were urged. The importance of applied climatology was noted in the resolution asking that meteorological journals be apprised of articles in this field, and in the resolution recommending the establishment of a permanent subcommission on applied climatology. Similar subcommissions were recommended on climatological procedures, and on machine methods. Committee lists and a photograph of those attending the session are also included. *Subject Headings:* **I.M.O. Publications, Toronto Conference of 1947, Climatological Commission.**—*G.C.B.*

2.5–171 551.58:016(43)

†Flohn, H. and Blüthgen, J., **Naturforschung und Medizin in Deutschland 1939–1946. B. Klimatologie.** [Natural science and medicine in Germany 1939–1946. B. Climatology.] FIAT *review of German Science, für Deutschland bestimmte Ausgabe*, Vol. 44, *Geographie*, Part 1: 42–69, [1948.] 4 figs., 300 refs. **MH-BH**—A rapid survey of all German work on climatology 1939–1946, classified by subjects. The 300 references are without titles. *Subject Headings:* **Climatology, Bibliographies.**—*C.E.P.B.*

2.5–172 551.58(09)

Reichel, Eberhard, **Entwicklungslinien der Klimatologie.** [Lines of development in climatology.] *Naturwissenschaftliche Rundschau*, 3(10):440–446, Oct. **1950.** 19 refs. **DLC**—The following trends are recognizable in climatology during the past 25 years: statistical analysis of the frequencies of the individual climatic elements, of various combinations of these elements, of air masses and fronts, of various climatic phenomena such as droughts, of daily and interdiurnal variations of climatic variables, etc.; establishment of climatic indices such as cooling off index and aridity index; studies on the relationship of weather processes and climate, for example the role of air masses and fronts in the formation of climatic types and their classification; attempts at more complete physical explanation of climatic processes, especially the heat balance of the atmosphere; studies on the climate of the free atmosphere, on regional climatology; more varied and extended studies in microclimatology; agricultural and forest climatology; human climatology, in particular physiological and medical climatology; chemical climatology with special reference to air pollution; industrial climatology; aviation climatology and investigations of the relationship between climatology and the hydrologic cycle. *Subject Headings:* **Climatology, History.**—*I.L.D.*

2.5–173 551.58:63

Walter, A., **Research scheme on climatic data in relation to agriculture.** *East African Agriculture and Forestry Research Organisation, Annual Report* **1949.** 41 p. **DA**—Brief report of comparison between daylight temperature curve and solar radiation in E. Africa. Radiation is given by a function of maximum and minimum temperatures and dry- and wet bulb. *Subject Headings:* **Climatology, Agriculture, East Africa.**—*C.E.P.B.*

2.5–174 551.581

Gorczyński, Władisław, **System dziesiętny klimatów świata.** [Decimal system of world climates.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, No. 1:30–43, April **1948.** fig., 5 tables, 5 refs. English summary p. 3–4. **MH-BH**—Adapted from author's book "Comparison of climates of the United States and Europe" (1945). The 10 main types mapped are: 1) wet tropical, 2) intertropical savannah, 3) desert, 4) steppe, 5) temperate, summer rains, 6) do. winter rains, 7) do. rain through year, 8) continental snowy, 9) continental dry, 10) sub-polar. Each can be sub-divided. Basis is temperature, precipitation and aridity factor. *Subject Headings:* **Climatic classification, Europe, United States.**—*C.E.P.B.*

CLIMATOLOGY OF PARTICULAR PLACES

2.5–175 551.582(781)

*Flora, Snowden Dwight, **Climate of Kansas.** Topeka, Kansas, Fred Voiland, Jr., **1948.** 320 p. 17 figs., numerous photos, charts, maps and tables. *Report of the Kansas State Board of Agriculture*, Vol. 67, No. 285, June 1948. **DWB**—This book consists mainly of tabular and graphic data compiled from the large amount of observational material accumulated at Topeka since the state climatological center was organized there in 1887. The oldest records date back to 1836 and at present there are about 200 stations regularly reporting various elements. The discussion consists of the usual treatment of the several elements and, in addition, discussion of droughts, dust storms, evaporation, floods, flying weather, frost, hail-storms, thunderstorms, tornadoes, etc. with special analytical charts and tables for each. Several supplementary articles are of interest to agricultural and hydrologic workers: **Climate and insects,** by Roger C. SMITH, (p. 303–305); **Crop production and climate,** by H. H. LAUDE (p. 298–302); **Temperature and water supplies,** by George S. KNAPP (p. 307–320. 17 figs., table). *Subject Headings:* **Climatology, Climatological data, Kansas.**—*M.R.*

2.5–176 551.582:63(438)

Gumiński, Romuald, **Próba wydzielenia dzielnic rolniczo-klimatycznych w Polsce.** [The establishment of agricultural-climatic regions in Poland.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, No. 1:7–20, April **1948.** figs., refs. English summary p. 3. **DWB**—Poland is divided into 21 climatic regions (fig. 2) on the basis of temperature, precipitation and soil humidity. *Subject Headings:* **Agro-climatic regions, Poland.**

2.5–177 551.582(8)

*Johansson, Osc. V., **Thermische Studien über das Klima in Südamerika.** [Temperature studies on the climate of South America.] *Helsinki, University, Meteorologian laitos, Mitteilungen*, No. 66, **1950.** 77 p. fig., 17 tables. In German. **DWB**—A profound statistical treatment of the data compiled by KNOCH for the Köppen-Geiger Handbook, using various systems (such as Köppen, Kerner and others) devised to smooth, reduce to sea level or homogenize the extensive (but often fragmentary) observational material for this vast continent. The annual course of mean temperature fluctuates as affected by radiation, continentality, elevation, latitude, topography, etc. The extreme southern stations are compared with similar ones in the Northern Hemisphere and stations in the tropics on both sides of the equator are compared. *Subject Headings:* **Climatology, Temperature regions, South America.**—*M.R.*

2.5–178 551.582(99)

Kalesnik, S. V., **Priroda Antarktiki.** [Nature of the Antarctic.] *Vsesoiuznoe Geograficheskoe Obshchestvo, Izvestiia*, 81(6):557–568, Nov–Dec. **1949. DLC**—In addition to a general discussion of the history of the discovery of the Antarctic and of its physical geography and biogeography, the article contains some general climatic data. The mean summer (Dec., Jan. and March) is everywhere less than 0°C. At the northern limits the temperature ranges between 0°–2°C. and on the continental plateau it is below −20°C. The highest temperature reported in the Antarctic is +6°C. (Graham Land). Winter temperature varies between −18° and −36°C. and is not as severe as that of eastern Siberia. The absolute minimum is between −50° and −62°C. Winds are strong, particularly during winter. At Adélie Land mean annual wind velocity is 22 m./sec. On the seas barometric pressure is low but is slightly higher over the continent. Lowest temperatures occur during the presence of a temperature inversion which may extend 1.5 km. Annual precipitation ranges between 200 and 400 mm. at the edges of the continent. In a few places it may be as high as 600–800 mm.; on the Ross Barrier it is less than 190 mm. Rainfall is extremely rare. *Subject Headings:* **Climatology, Antarctic.**—*I.L.D.*

2.5–179 551.582.1(494.1)

Ekhart, E., **La classification des Alpes au point de vue météorologique.** [The classification of the Alps from the meteorological point of view.] *Geofisica Pura e Applicata*, 17(3–4):136–141, Oct.–Dec. **1950.** table, 12 refs. German and English summaries p. 136. **MH-BH**—Four meteorological zones are defined for the Alps: 1) the slope-atmosphere, 2) the valley-atmosphere, 3) the mountain atmosphere, and 4) the free atmosphere. The meteorological conditions prevalent in these zones are discussed and the conditions found in the central, the border zones and the foreland zones are tabulated and compared. *Subject Headings:* **Alpine climates, Climatic classification, Mountain meteorology, Alps.**—*M.R.*

2.5–180 551.582.1(494.1)

Schneider-Carius, Karl, **Lo strato base dell'atmosfera come determinante il clima delle Alpi.** [The lower layers of the atmosphere as a climatic control in the Alps.] *Geofisica Pura e Applicata*, 17(3–4):94–103, Oct.–Dec. **1950.** 18 refs. German summary p. 94. **MH-BH**—A discussion of the most important aspects of mountain climate: 1) the micro and macroclimatic effects of snow cover in the Alps; 2) the vertical distribution of climate; 3) the surface inversion in the mountain atmosphere; 4) the extreme lowest temperature in Central Europe (at Gstettneralm near Lunz am See, el. 4250 ft.) which was −48°C.; 5) the temperature at the summit of mountains compared with the free air (−5° to −8°C.); the influence of orography on mountain climate. *Subject Headings:* **Mountain meteorology, Temperature extremes, Climatic controls, Alps.**—*M.R.*

MICROCLIMATOLOGY

2.5–181 551.584:551.506.1:551.508.26

*§Gerhardt, J. R., Jehn, K. H. and Staley, R. C., **Micrometeorological research data. Vol. III.** *Texas, University, Electrical Engineering Research Laboratory, Report* No. 42, Sept. 1, 1950. [n. p.] maps, charts mostly tables, 8 refs. (U. S. Navy Contract N6onr-266, T. O. II, NR 082 005.) **DWB.** *Idem.*, **Final report of the micrometeorological research conducted under Office of Naval Research Contract N6onr-266, T. O. II.** *Ibid., Report* No. 44, Sept. 30, 1950. 32 leaves. 10 figs., 3 tables, 18 refs., 9 equations. **MH-BH**—In this third volume the main features of exposure, instrumentation, method of compiling and publishing data, observations from auxiliary stations in other parts of Texas and the status of tower measurements are discussed, and detailed data are given in tables and charts. Synoptic charts and aerological soundings are shown for each date on which micrometeorological records are given.

In the final report, details of the instrumental exposures and site at Manor, Texas, are given in drawings and photographs. Data obtained are critically evaluated as to accuracy. Performance of equipment, especially thermistors, is discussed and results of calibrations and checks at various short intervals are given. Accomplishments are reviewed and a bibliography of reports published is attacked. *Subject Headings:* **Calibration of instruments, Micrometeorological data, Thermistors.**—*M.R.*

2.5–182 551.584.31:63(768)

Shanks, Royal E. and Norris, Fred H. **Microclimatic variation in a small valley in eastern Tennessee.** *Ecology*, 31(4):532–539, Oct. 1950. 5 figs., 2 tables, 10 refs. **DLC**—The authors studied the fall temperature pattern and trend, the frost pattern, and actual freezing damage to tomato plants on the north and south facing slopes of a small east-west valley near Knoxville, Tennessee. The area was occupied by unpastured natural vegetation, with contrasting association segregates on the north and south slopes. Temperature was measured with maximum minimum thermometers mounted one foot above the ground at fourteen points in the valley. Stations on opposite slopes showed a mean temperature difference of 3°F., which was caused by differences in the maxima. The fall temperature trend showed increasingly lower maxima and minima with south slope having the higher maxima, and the north slope the lower minima. Differences in minimum temperature on opposite slopes did not exceed 2°F. and were usually 1°F.; but they became critical during the freezing range. From an analysis of the frost pattern and freezing damage, it was concluded that the duration of freezing temperatures on a night of continuous record is a more reliable criterion of frost hazard than minimum temperature attained and that a 20 day difference in the length of the fall portion of the growing season existed in a small topographic unit. *Subject Headings:* **Microclimatology, Frost damage, Tomato crops, Tennessee.**—*I.L.D.*

2.5–183 551.584.5

†Vinaccia, Gaetano, **L'urbanistica e la climatologia alpina: la scelta dei luoghi da edificare in montagna.** [Town planning and Alpine climatology: the choice of sites for buildings in mountain regions.] *Geofisica Pura e Applicata*, 17(3–4):238–245, Oct.–Dec. 1950. 14 refs. Italian and English summaries p. 238. **MH-BH**—A detailed proposal for establishing numerous cooperative stations and taking observations (to be supervised by trained meteorologists), in the vicinity of towns, for the purpose of determining microclimatic conditions for the better location of buildings, parks, resorts, etc. Radiation, rainfall, temperature, wind and other factors are considered vital. *Subject Headings:* **Town planning, Microclimates.**—*M.R.*

2.5–184 551.584.61

Metzler, Karl, **Das Raumklima unter besonderer Berücksichtigung der Süd- und Westseite.** [Room-climate with special regard to the south- and west-sides.] *Annalen der Meteorologie*, 3(9–10):291–297, 1950. 6 figs., 6 refs. **MH-BH**—To find whether windows of a school building should face S. or W., thermohygrographs were installed in two similar rooms facing S. and W. and compared with screen values. Hourly curves of temperature and humidity are given under various conditions (average, clear and cloudy, closed and ventilated).

The W. room shows a high peak temperature on summer afternoons, but in morning, midday and in winter throughout the day, the S. room was best. The effect of radiation is considered and the heating effect of a flat roof found to be important. *Subject Heading:* **Indoor climate.**—*C.E.P.B.*

BIOCLIMATOLOGY—APPLIED CLIMATOLOGY

2.5–185 551.586:612

Hurynowicz, Janina, **Higiena pracy umysłowej a pory roku.** [Mental hygiene and the seasons of the year.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, No. 2–4:44–55, Dec. **1948.** English summary p. 53–55. **DWB**—Since 1923 the author has collected data and references and made a study of the effect of climatic factors and season on mental efficiency and nervous diseases among students in Poland. A comparison with similar studies, made in America, France, Germany and Russia, show that there is a seasonal variation with a peak in January–February and a rapid decrease in efficiency and increase in nervous disorders during spring and early summer. Suggestions are made for revising the school year (and vacation periods), to allow examinations to come at the optimum time. *Subject Headings:* **Mental hygiene, Climatic effects, Medical meteorology.**—*M.R.*

2.5–186 551.586:612

Zhukov, A. P., **Metodika i rezul'taty issledovaniia organa slukha na vysotakh.** [Method and results of investigations of the organ of hearing at high altitudes.] (In Trudy El'brusskoĭ Ekspeditsii Akademii Nauk, SSSR, i Vsesoiuznogo Instituta Eksperimental'noĭ Meditsiny 1934 i 1935. [Reports of the Elbrus Expedition 1934 and 1935.] Moscow, **1936.** p. 361–378. 3 figs., 2 tables, 31 refs. Summary in English p. 377–378. [*Ak. Nauk, SSSR, Komissiia po izucheniiu stratosfery*, Tom II.] **DLC**—The effect of elevation of 2200 m., 4250 m. and 5350 m. upon the acuity of hearing was investigated in 5 persons. The thresholds to high frequencies rise from an elevation of 2200 m. and upwards. The return to normal was partial and took a longer time at elevations of 4250 m. and 5350 m. At the latter elevation, the threshold low frequencies increased. Also the following phenomena were observed, viz.: narrowing of the zone of optimal audibility, rise of thresholds to medium frequencies and a perception of tonal pitch that is at variance with the frequency supplied. Individuals registering a particularly marked increase in threshold manifested a shortening of vestibular chronaxie. *Subject Headings:* **Physiological climatology, Elbrus Expedition, U.S.S.R.**—*I.L.D.*

2.5–187 551.586:615.8

Bincer, Viktor, **Dane klimatyczne w polskiej medycynie morskiej.** [Climatological data for maritime medicine in Poland.] *Przegląd Meteorologiczny i Hydrologiczny*, Warsaw, No. 2–4:56–61, Dec. **1948.** English summary p. 61. **DWB**—Resorts along the North Sea Coast of Poland and climatological stations in that vicinity were closed down during the war. The importance of re-establishing these stations, to provide scientific data for proper evaluation of the beneficial effects of a marine climate, is stressed. Types of observational data and places where it should be obtained are named. *Subject Headings:* **Seaside resorts, Balneology, Climatotherapy, Poland, North Sea Coast.**—*M.R.*

2.5–188 551.586:615.8(93)

Richter, G., **Klimatische Verhältnisse einiger Kurorte am ostsächsischen Erzgebirgshang.** [Climatic conditions of several health resorts on the slope of the Erz Mountains in east Saxony.] *Leipzig, Universität, Geophysikalisches Institut, Veröffentlichungen, Ser.* 2, 15:179–190, **1949.** 3 figs., ref. **DWB**—A summary of a more comprehensive study made by the author (unpublished) during 1941–42, supplemented by material collected during 1938–1943 on the temperature, humidity, wind, sunshine and radiation conditions of 3 locations in the Erz Mountains which are representative of the many health and winter resorts in that area. The longer winter season in the highest location is shown in contrast to the longer summer season in the lowest valleys. *Subject Headings:* **Mountain resorts, Winter sports, Local climates, Climatotherapy, Erz Mountains, East Saxony, Germany.**—*M.R.*

2.5–189 551.586:616

Gressel, W. and Thalhammer, O., **Zur Frage meteorologischer Einflüsse auf den Diabetes Mellitus. Vorläufige Mitteilung.** [On the question of meteorological influences on Diabetes mellitus. Advance communication.] *Wetter und Leben*, 3(1–2):12–14, Jan. **1951. MH-BH**—The full work will appear in *Archiv für Meteorologie, Geophysik und Bioklimatologie*. From 1946–48, 84 cases of increase of sugar in urine were found that were not due to medical causes. In the same period, 108 cases of marked weather change occurred, in 63 of which there was an increase of sugar. Similar results 1948–50. All showed rapid pressure oscillations and occurred even in closed rooms. Medical details discussed. *Subject Headings:* **Medical climatology, Diabetes.**—*C.E.P.B.*

2.5–190 551.586:636

Trumble, H. C., **The relation of wet-season variability to fat-lamb production in South Australia.** *Royal Society of South Australia, Transactions*, 69(1):16–21, **1945.** 2 figs., 4 tables, 4 refs. **DWB**—The wet season variability associated with fat-lamb production in Australia is analyzed on the basis of empirical relationships established between the mean length of the period of influential rainfall and the maximum expected occurrence of effective rainfall periods of 4 and 5 months in each case dating from the first month for which maximum values begin. The constants for the two fitted regression equations of the 4 and 5 month periods are given. The frequencies of effective rainfall periods of 4 and 5 months had been calculated for 227 stations, and maps, showing the distribution of fat lambs and isolines of these periods, have been continued. The maps indicate the importance of such areas as Southeast, the Mount Lofty Ranges and Kangarov Island, which receives 90 percent or more of seasons sufficient duration, in raising fat lambs without hand feeding. *Subject Headings:* **Agricultural climatology, Animal husbandry, South Australia.**—*I.L.D.*

MISCELLANEOUS APPLICATIONS

OPTICAL PHENOMENA

2.5–191 551.591:551.508.92

Foitzik, L., **Sichtbeobachtung—Sichtmessung.** [Visibility observation—measurement.] *Zeitschrift für Meteorologie*, 5(1):1–14, Jan. **1951.** 4 figs., 5 tables, 24 refs. **MH-BH**—Describes an experiment in determining visibility by day to an accuracy of at least 10% using about 50 objects classified into 8 sectors, 10 logarithmic intervals of distance, and 5 degrees of visibility. Visibility in km. is given by (distance of object)×(visibility factor). Selection of objects during 2 hours after sunset is examined (moonlit, moonless, cloudy). The meaning of visibility is considered with reference to 4 types of visibility meter but the use of natural objects is considered preferable except for very limited horizons. At night, photometry of lights is preferred. For continuous day and night work author advocates light-transmission apparatus over a few hundred meters. He gives examples of autographic 24-hour records on 4 selected days. *Subject Headings:* **Visibility measurements, Visibility meters.**—*C.E.P.B.*

2.5–192 551.593.12

Butler, H. E., **Photo-electric observations of the scintillation of stars.** *Nature, London*, 167(4242):287–288, Feb. 17, **1951.** fig. **DWB**—Telescopic observations with a photocell in Dublin showed fluctuations of 40–25% with a frequency of 50 cycles/sec. near horizon and nearly 400 near zenith. *Subject Headings:* **Optical phenomena, Scintillation.**—*C.E.P.B.*

2.5–193 551.593.54

Runge, H., **Blaue Sonne—blauer Mond.** [Blue sun—blue moon.] *Zeitschrift für Meteorologie*, 5(2):60–62, Feb. **1951.** 4 figs. **MH-BH**—On Sept. 27, 1950 the sky over east Germany was dirty brown and the sun and moon blue. This is attributed to great forest fires in Canada; the track of the smoke from New York is illustrated by the 500 mb. charts for Sept. 24–27. *Subject Headings:* **Turbidity, Blue sun, Smoke pall—Sept. 1950.**—*C.E.P.B.*

2.5–194 551.593.63

Sonntag, D., **Beobachtung eines Mondhalos am 31. August 1950.** [Observation of a lunar halo on 31 Aug. 1950.] *Zeitschrift für Meteorologie*, 4(7–8):253, July–Aug. **1950. MH-BH**—At Leipzig a halo of 20–30° diameter had lateral and upper arcs of contact with mock moons. *Subject Heading:* **Halos.**—*C.E.P.B.*

2.5–195 551.593.653

Housman, H. B., **Noctilucent clouds.** *Weather*, 6(2):62, Feb. **1951. DWB**—Fine display of luminous blue-green clouds at 2300 hrs. on 30 June 1950 50–60 miles over Cumberland. *Subject Headings:* **Noctilucent clouds, Cumberland, England.**

2.5–196 551.593.9

Meyer, Rudolf, **Doppelschatten.** [Double shadows.] *Zeitschrift für Meteorologie*, 4(7–8):245–247, July–Aug. **1950.** 7 refs. **MH-BH**—Refers to note by W. Maier, *Zeitschrift für Meteorologie*, 4(1–2), 1950. Double shadows occasionally occur even with a clear sky. Author calculates illumination from different parts of the sky and finds that with low sun there should be a second shadow of different color about 20° from the sun. *Subject Heading:* **Optical phenomena.**—*C.E.P.B.*

ELECTRICAL PHENOMENA

2.5–197 551.594.221

Fritsch, Volker, **Blitzschläge im Gebirge.** [Lightning strokes in mountains.] *Geofisica Pura e Applicata*, 17(3–4):199–203, Oct.–Dec. **1950.** 3 figs., tables. English summary p. 199. **MH-BH**—A formula for computing lightning danger in an area is presented and applied to mountain areas of the Austrian Alps and Saxony. It was found from these statistics that the frequency of strokes depends on geological structure and is greatest where old formations or numerous faults occur. A chart of *lightning danger* in Austria and one showing pockets of frequent strokes in Saxony is presented. The formula is:

$$\text{danger factor} = \frac{\text{number of strokes} \times 1000}{\text{area in square km.} \times \text{average no. of thunderstorms}}.$$

Subject Headings: **Mountain meteorology, Lightning danger, Saxony, Austrian Alps.**—*M.R.*

2.5–198 551.594.221

Wood, C. A., **Unusual lightning.** *Weather*, 6(2):64, Feb. **1951.** fig. **DWB**—Notes on flashes branched upwards from top of cumulonimbus at Broome, Australia, reproduced from Keay, N. J. in R.A.A.F. Tropical Weather Research Bulletin April 1945. *Subject Headings:* **Lightning, Australia.**

2.5–199 551.594.25

Gunn, Ross, **The free electrical charge on thunderstorm rain and its relation to droplet size.** *Journal of Geophysical Research*, 54(1):57–63, March **1949.** 2 figs., table, 4 refs., 2 equations. Abstract p. 57. **MH-BH**—A new electrometer (Rev. Sci. Instr. 1949) measured simultaneously free electric charge and mass of single raindrops. The critical charge on an isolated sphere is about 100 esu/cm x a^2 where a is radius, but owing to deformation of charge by neighboring droplets and deformation of sphere maximum charge is only 1/10 of this. Charges measured in thunderstorms varied from 1–10 esu, mean 2.85 the largest droplets having highest charge. On the average sign changed for every third droplet. Average charge per drop, +.015 esu, −.019, average mass +.0014 gr., −.0027. *Subject Heading:* **Electricity of precipitation.**—*C.E.P.B.*

2.5–200 551.594.25

Hutchinson, W. C. A. and Chalmers, Alan J., **The electric charges and masses of single raindrops.** *Royal Meteorological Society, Quarterly Journal*, 77(331):85–95, Jan. **1951.** 4 figs., 4 tables, 21 refs. **MH-BH**—Authors measured radius a and charge Q of 1,128 drops in 54 periods of rain; the field and the point-discharge current I were measured at the same

instant. Apparatus and technique described. With a +field, −charges predominated; with a −field, zero and +charge. Charges were highest when point discharges occurred. The correlations (173 sets) were: a,Q,−.15; a,−I,+.05; Q,−I,+.36; Q/−I,a,+.18. The physical relation between Q and $-I$ is established statistically. Results agree with G. C. SIMPSON. Without point discharge, charges were generally small and of opposite sign to field. The observed drop charges were in many cases much larger than the theoretical maximum on Wilson's ion-capture theory, and support separation of charge in or below the cloud. *Subject Heading:* **Electricity of precipitation.**

AURORAS

2.5–201 551.594.5

Barbier, D. and Williams, D. R., **Observations of the aurora borealis.** *Journal of Geophysical Research*, 55(4):401–414, Dec. **1950.** 5 figs., table, 15 refs., equation. **DWB**—Spectrographic and photoelectric-photometric observations of the aurora borealis were made at Fairbanks, Alaska. The proposed identifications of lines and bands in the spectral range from 3100 Å to 500 Å are presented in a table. The intensities of the second pontine N_2 group correlate well with laboratory observations and with the measurements of Vegard. The intensities of the negative N_2^+ spectrum differ from those observed in the laboratory and also from those of Vegard. Night sky O_2 Herzberg bands and night sky Y bands are present in the auroral spectra. There is no correlation between the observed intensity distribution in the Vegard-Kaplan system in the aurora and that in the night sky. The characteristics and significance of the various other bands and lines observed are discussed. The presence of NI 3467 and OI 4368 is confirmed. Several observations in the visible between 6400 and 6900 Å are discussed and visual observations of auroral phenomena including a blue, sunlit, aurora, are presented. *Subject Headings:* **Auroras, Upper atmosphere.**—*I. L. D.*

2.5–202 551.594.5:550.385

Ferraro, V. C. A., **The southward shift of the auroral zone during intense magnetic storms.** *Journal of Geophysical Research*, 55(4):493, Dec. **1950. DWB**—The author shows that the suggestion ascribing the origin of auroras to electrical corpuscles escaping towards the polar regions from the main body of the solar streams upon impinging in the earth's atmosphere is in harmony with the observed fact that the lower limit of the auroral zone is shifted southwards (in the Northern Hemisphere) during intense magnetic storms. *Subject Headings:* **Auroras, Magnetic storms, Atmospheric electricity.**—*I. L. D.*

2.5–203 551.594.5:550.385

Moiseev, A. P., Astapovich, I. S. and Savich, V. P. (ed.), **Zamechatel'noe poliarnoe siianie 20 fevralia 1950 g.** [Remarkable aurora borealis on February 2, 1950.] *Priroda*, 39(11):48–49, Nov. **1950.** 4 refs. **DLC**—Report on a brilliant and colored aurora borealis observed in Moscow and other places on Feb. 20, 1950. According to additional reports received by the editor, the phenomenon has been observed in different points of European and Asiatic Russia as well as in western Europe and the U.S.A. One observer reported seeing red rays reflected from snow. Communications were interrupted over many parts of Eurasia and the North Atlantic (*see* MIDDLETON, *Sky and Telescope*, No. 6, p. 139, 1950) also (*L'Astronomie*, Vol. 64, p. 123, 1950). The magnetic storm corresponded with a very large group of spots located on the central meridian of the sun Feb. 20, 1950. *Subject Headings:* **Auroras, Magnetic storms, U.S.S.R.**—*M. R.*

2.5–204 551.594.5

Thomsen, I. L., **Notes on the Aurora Australis.** Sixth Pacific Science Congress 1947. Transactions. *Royal Society of New Zealand, Transactions*, 77(5):102–103, Nov. **1949. DLC**—*Subject Heading:* **Auroras.**

2.5–205 551.594.51

Gartlein, C. W., **Protons and the aurora.** *Nature, London*, 167(4242):277, Feb. 17, **1951.** 2 refs. **DWB**—Describes spectrograms obtained at Arnprior (Ont.) and Ithaca (N. Y.) of an auroral arc on Sept. 30, 1950 showing hydrogen line at 6562–6563A. *Subject Heading:* **Auroral spectra.**—*C.E.P.B.*

PART II. SELECTIVE ANNOTATED BIBLIOGRAPHY ON THE CLIMATOLOGY OF THE NEAR EAST

By: *Harris P. Kramer*

EXPLANATORY NOTE

A fairly extensive search has been conducted for material dealing with the climatological elements of the land and sea regions of the Near East (Asia Minor and vicinity). Of the many references found, 240 items have been selected as most pertinent to the subject and to the region.

Books or paper on the general geography of the region, in which only brief or superficial treatment is afforded to climate, have been omitted. Exception is made in the case of general geographic works when a thorough, comprehensive survey of climate or hydrology is included, or detailed or extensive data on climatological elements are tabulated.

The asterisk (*) is used in this particular bibliography to designate any good source of data, brief or lengthy, original or summarized. The dagger (†) indicates an excellent source of references. Special attention may be called here to item 2E–213, "Bibliography on Palestine and surrounding forestry, meteorology, climatology, and soils," which contains numerous references which can be used by anyone making a more exhaustive search for literature.

The "Outline of Contents" below will indicate the scope of the subject matter. Meteorological elements are listed under each country or region in the order set up for Universal Decimal Classification numbering. First, the countries of the Near East appear in alphabetical order, followed by its particular regions in alphabetical order, then the Black Sea, and lastly, regions neighboring the Near Eastern countries, which are indexed when they appear simultaneously in studies with the Near East. Separate bibliographies will appear at later dates in *Meteorological Abstracts and Bibliography* on the climatology of these regions.

OUTLINE OF CONTENTS

Regional Divisions

Near East (in general, including Asia Minor). See also Eastern Mediterranean Region
- Climatology, 2E–1, –2, –18, –47, –83, –104, –162, –171, –187, –196, –208
  - Aviation climatology, 2E–163, –185
  - Historical climates, 2E–153
  - Observational or climatological data, 2E–202, –208
- Atmospheric formations—Air masses, 2E–51, –77, –110
- Radiation, 2E–158
- Temperature, 2E–143, –180
- Atmospheric pressure, 2E–41, –74
- Winds, 2E–41, –74, –88
  - Khamsin or Sirocco, 2E–77
  - Upper air winds, 2E–58
- Humidity, 2E–180
- Precipitation, 2E–51, –110, –139, –146, –150, –179, –198
- Geography, 2E–47, –104

Israel
- Periodicals, 2E–215
- Bioclimatology, 2E–208
- Climatological data, 2E–208, –215

Transjordan (*Now* **Jordan**)
- Climatology, 2E–149, –169, –189
  - Observational data, 2E–131, –184
- Thunderstorms, 2E–240
- Squalls, 2E–93
- Winds, 2E–124
  - Upper air winds, 2E–124
- Precipitation, 2E–113, –126, –139, –142, –179, –189, –190, –194
- Hydrology, 2E–149, –188
  - Floods, 2E–113

Palestine (*See also* **Israel**)
- Bibliography, 2E–213
- Periodicals, 2E–214, –216 to –221
- Climatology, 2E–3, –9, –15, –21, –24, –28, –34, –35, –39, –72, –123, –130, –136, –137, –169, –213
  - Climatic changes—Historical climates, 2E–11, –15, –19, –32, –46, –94, –136, –151, –152
  - Bioclimatology, 2E–207
    - Agriculture, 2E–132, –183, –190, –191, –209
    - Forests, 2E–4
    - Human ecology, 2E–57, –84, –191, –192
    - Medical meteorology, 2E–183, –186

Microclimatology, 2E–100
Observational or climatological data, 2E–10, –14, –63, –66, –81, –102, –145, –173, –184, –202, –213, –214, –216 to –221
Line squalls, 2E–107
Radiation, 2E–118, –122, –158
Temperature, 2E–14, –76, –105, –109, –158, –180
Atmospheric pressure, 2E–14, –125
Winds, 2E–28, –76, –115, –125, –138
Khamsin or Sirocco, 2E–59, –67, –68, –78, –108, –109
Monsoons, 2E–79
Upper air winds, 2E–62, –79, –124
Humidity, 2E–180
Evaporation, 2E–116
Precipitation, 2E–4, –10, –11, –19, –52, –56, –60, –63 to –65, –90, –92, –96, –107, –126, –127, –133, –139, –142, –151, –152, –165, –182, –185, –194, –211, –217, –220
Snow, 2E–69
Dew, 2E–117, –121, –203, –210
Hydrology, 2E–152, –188
Floods, 2E–125
Water level variations (Dead Sea), 2E–44, –96
Dead Sea observations, 2E–44, –66, –96, –105, –121, –137, –138, –173

Sinai
Sirocco, 2E–68
Precipitation, 2E–90, –126
Floods, 2E–125

Syria and Lebanon
Periodicals, 2E–222 to –230
Climatology, 2E–15, –27, –103, –112, –123, –128, –141, –176, –182, –195, –196, –199
Aviation climatology, 2E–159, –164, –224
Climatic changes—Historical climates, 2E–15
Medical meteorology, 2E–112
Observational and climatological data, 2E–71, –184, –193, –221, to –230
Thunderstorms, 2E–197
Temperature, 2E–143
Atmospheric pressure, 2E–125, –181, –204
Winds, 2E–88, –125, –182
Sand storms, 2E–111, –234
Evaporation, 2E–157
Precipitation, 2E–90, –96, –126, –133, –142, –165, –166, –179, –182, –212
Hydrology, 2E–195, –196
Floods, 2E–125
Water level variations, 2E–141

Turkey
Periodicals, 2E–231 to –233
Observatories and networks, 2E–31, –86, –89
Climatology, 2E–1, –12, –16, –17, –20, –23, –25, –29, –30, –33, –36, –37, –38, –43, –54, –61, –140, –156, –159, –170, –172, –178, –205, –207, –209, –238, –239
Bioclimatology, 2E–140, –206
Plant ecology, 2E–140
Forests, 2E–206
Agricultural meteorology, 2E–168
Aviation climatology, 2E–154, –155, –159
Observational and climatological data, 2E–13, –23, –30, –54, –99, –172, –184, –205, –231 to –233
Synoptic codes, 2E–235
Atmospheric pollution, 2E–87
Radiation, 2E–114
Temperature, 2E–6, –13, –83, –95, –134, –237
Atmospheric pressure, 2E–7, –55
Winds, 2E–60, –75
Sirocco, 2E–83
Humidity, 2E–26
Aridity, 2E–170
Evaporation, 2E–114, –209
Fog, 2E–87, –91
Clouds, 2E–18
Precipitation, 2E–5, –6, –13, –18, –26, –75, –95, –99, –101, –139
Tidal waves, 2E–236

Mediterranean Sea and Bordering Regions (in general)
Climatology, 2E–2, –119, –123, –135, –147, –156, –167, –174
Climatic changes—Historical climates, 2E–8
Synoptic meteorology, 2E–175
Air masses, 2E–187, –205
Occlusions, 2E–82
Radiation, 2E–40, 2E–169
Atmospheric pressure, 2E–53, –74
Winds, 2E–74, –88
Clouds, 2E–40, 2E–169
Precipitation, 2E–49, –50, –53, –206
Marine meteorology, 2E–123, –156

Eastern Mediterranean Region. See also Near East
Climatology, 2E–47, –48, –106, –148, –162
Thunderstorms, 2E–240
Air masses, 2E–144
Temperature, 2E–85
Atmospheric pressure, 2E–41
Winds, 2E–41
Etesian, 2E–73, –201
Sand storms, 2E–45
Upper air winds, 2E–58, –201
Humidity, 2E–85
Precipitation, 2E–49, –177
Marine meteorology, 2E–148, –162

Adriatic Sea
Climatology, 2E–136
Winds, 2E–88

Cyprus
Periodicals, 2E–214
Climatology, 2E–22, –42, –123, –130, –184, –214
Air masses, 2E–187
Atmospheric pressure, 2E–74
Winds, 2E–74
Upper air winds, 2E–129
Evaporation, 2E–42

Greece
Climatology, 2E–144, –156, –200

Black Sea
Climatology, 2E–70, –135, –155, –160, –239
Synoptic meteorology, 2E–80, –91
Cyclones, 2E–97
Storms, 2E–80

Atmospheric pressure, 2E–74
Winds, 2E–74, –88, –120
Precipitation, 2E–139
Marine meteorology, 2E–70, –160
Middle East, 2E–74, –104, –171, –185, –193, –208
Afghanistan, 2E–172
Arabia, 2E–74, –193
Armenia, 2E–98, –139, –150
Iran, 2E–41, –110, –159, –193
Iraq and Mesopotamia, 2E–33, –57, –107, –124, –142, –159, –179, –181, –184, –187, –193
Persian Gulf, 2E–41
Red Sea, 2E–41, –119, –125
U.S.S.R., 2E–91, –110, –158, –159, –166
Caucasus, 2E–158, –159, –161
Tiflis, 2E–7
Africa
Egypt, 2E–60, –74, –78, –88, –110, –123, –124, –130, –158, –163, –164, –184
North Africa, 2E–47
Sudan, 2E–130
Balkans, 2E–47, –74, –110, –163, –164
India, 2E–104, –110

BIBLIOGRAPHY ON THE CLIMATOLOGY OF THE NEAR EAST

1856

2E–1 551.582(56)

†*de Tchihatcheff, P., **Asie Mineure, description physique, statistique, et archéologique. 2e partie. Climatologie et zoologie.** [Asia Minor, physical, statistical and archeological description. Pt. 2. Climatology and zoology.] Paris, **1856.** p. 3–587. numerous tables, refs. **NN**—Climates of different parts of Asia Minor (mainly Turkey) are taken up by region; observations of barometric pressure, temperature, wind, etc. are considered for Constantinople, Trebisonde, Kaisaria Tarsus, Brousse, Smyrna, Chios, Erzeroum Uroumia, Erivan, Mosul. Chapters also discuss freezing of the Black Sea, perpetual snow regions and arborescent vegetation, and general review of the climatology of all the various regions of Asia Minor. *Subject Headings:* **Climatology, Turkey, Near East.**

1879

2E–2 551.582.1(262)

*Fischer, Theobald, **Studien über das Klima der Mittelmeerländer.** [Studies on the climate of the Mediterranean countries.] *Petermanns Geographische Mitteilungen,* Ergänzungsheft, No. 58, **1879.** 63+p. 7 charts, 3 plates, tables, refs. **DLC, NNA**—Extensive early work on all climatological elements of the region including much on the countries of the Near East, well illustrated by maps and observational data. *Subject Headings:* **Climatology, Mediterranean, Near East.**

1883

2E–3 551.582(569.4)

*Chaplin, Thomas, **Observations on the climate of Jerusalem.** *Palestine Exploration Fund, Quarterly Statement,* **1883.** p. 8–40. 17 tables. **NN**—Report embodies results of a series of observations for 22 years, 1860–1882. Climatological factors discussed are: rain, atmospheric pressure, temperature, winds, clouds and dew. Numerous tables are included. Similar article appears in German by same author: **Das Klima von Jerusalem.** [The climate of Jerusalem.] *Deutscher Pälastina-Verein, Zeitschrift,* 14:93–112, 1891. 12 tables. **NN.** *Subject Headings:* **Climatology, Jerusalem, Palestine.**

1885

2E–4 551.577.52(569.4)

Anderling, Leo, **Der Einfluss der Gebirgswaldungen im nördlichen Palästina auf die Vermehrung der wasserigen Niederschläge daselbst.** [The influence of mountain forests in northern Palestine on the amount of water-bringing rains there.] *Deutscher Palästina-Verein, Zeitschrift,* 8:101–116, **1885.** table, refs. **NN**—Summarized rainfall data from Jerusalem and Nazareth are used in speculative treatment. *Subject Headings:* **Precipitation variations, Forest influences, Palestine.**

1886

2E–5 551.524.3 551.577.3(56)

*Hann, Julius, **Temperatur von Konstantinopel. Regenfall in Konstantinopel.** [Temperature and rainfall in Constantinople.] *Meteorologische Zeitschrift,* 3:501–504, **1886.** 2 tables, 3 refs. **DWB, NNA**—One table gives temperature means, 1847–1885, and another gives monthly values of rainfall for each year 1846–1886, taken from data of Grellois, Ritter and Coumbary. *Subject Headings:* **Temperature, Precipitation, Istanbul, Turkey.**

2E–6 551.577.3(56)

***Rainfall at Smyrna.** *Meteorological Magazine, London,* 21:9–10, Feb. **1886.** table, ref. **DLC**—Table contains all the monthly rainfall values for 20 years, 1865–1883, together with mean for each month, for the year, as well as for the seasons. *Subject Headings:* **Precipitation, Smyrna, Turkey.**

1887

2E–7 551.542(47,56)

*Hann, Julius, **Tables of atmospheric pressure means for Tiflis and Constantinople.** (In: "Die Vertheilung des Luftdruckes über Mittel- und Süd-Europa." [On the distribution of air pressure over middle and south Europe.] *Geographische Abhandlungen*, Vienna, 2(2):191, 192, 1887. 2 tables.) **DWB**—Monthly means of atmospheric pressure at Tiflis, 1851–1885, and at Istanbul, 1856–1885, are tabulated. *Subject Headings:* **Atmospheric pressure, Tiflis, U.S.S.R., Istanbul, Turkey.**

1889

2E–8 551.583.2(262, 56)

Partsch, Josef Franz Maria, **Über den Nachweis einer Klimaänderung der Mittelmeerländer in geschichtlicher Zeit.** [On the evidence of a climatic change in Mediterranean lands in historic time.] VIII. *Deutsche Geographentage zu Berlin, Verhandlungen.* **1889.** 11 p. refs. **DLC.** Reprint. **NN**—References to Pliny, Herodotus, and other ancient geographers are made, and evidence of climatic changes discussed. No data given. Eastern Mediterranean included as part of region under discussion. *Subject Headings:* **Historical climates, Climatic changes, Mediterranean Region.**

1893

2E–9 551.582(569.4)

*Kassner, Carl Julius Arminius, **Zum Klima von Sarona bei Jaffa.** [On the climate of Sarona near Jaffa.] *Meteorologische Zeitschrift*, 10:256–262, **1893.** tables, refs. **DWB, NN**—Some observational data for Sarona, Palestine, for 1880–1889, of pressure, rain, cloud, temperature, wind, etc. are recorded and discussed. *Subject Headings:* **Climatology, Sarona, Palestine.**

1894

2E–10 551.506.1 551.577.3(569.4)

*Glaisher, James, **On the fall of rain at Jerusalem in the 32 years from 1861 to 1892.** *Palestine Exploration Fund, Quarterly Statement*, **1894.** p. 39–44. fig., 2 tables, ref. **NN**—Observational data, kept for 32 year period, are reported. One table shows fall of rain in every month during the 32 years; wide variation is noted. Other table shows three heaviest and three lightest falls of rain in every month except June, July, Aug. for the period.

Meteorological report from Jerusalem for year 1884. . . . 1885. . . . 1886. *Ibid.*, p. 44–46, 144–146, 266–268. tables of observational data. **NN**—*Subject Headings:* **Precipitation, Observational data, Jerusalem, Palestine.**

1895

2E–11 551.577.3(569.4)

Hann, Julius, **Die ältesten Regenmessungen in Palästina.** [The oldest measurements of rain in Palestine.] *Meteorologische Zeitschrift*, 12:136, **1895.** ref. **DWB, NNA**—Reference made to work by Hermann Vogelstein which pictures agriculture in Palestine in the first hundred years of the Christian era, using as source material the Mishnah and Tosefta. Consideration of rainfall amount and the rainy season is included and noted here. *Subject Headings:* **Precipitation, Historical climates, Palestine.**

2E–12 551.582.2(56)

Hann, Julius, **Klima von Trapezunt und Samsun.** [Climate of Trabzon and Samsun.] *Meteorologische Zeitschrift*, 12:455:456, **1895.** 3 tables, ref. **DWB, NNA**—Author discusses briefly atmospheric pressure, 1880–1889; temperature, 1884–1889; clouds, 1879–1889. Tables give monthly values for Trabzon and Samsun. *Subject Headings:* **Climatology, Trabzon, Samsun, Turkey.**

1898

2E–13 551.506.1(56)

*Manissadjian, J. J., **Resultate der meteorologischen Beobachtungen zu Merzifun, Kleinasien, im Jahre 1897.** [Results of the meteorological observations at Merzifon, Asia Minor, in 1897.] *Meteorologische Zeitschrift*, 15:345, **1898.** table. **DWB, NNA**—Monthly values and year's averages given for temperature extremes, means, variations and rainfall measurements. *Subject Headings:* **Temperature, Precipitation, Observational data, Merzifon, Turkey.**

2E–14 551.543(569.4)

*Glaisher, James, **On the pressure of the atmosphere at Jerusalem, 1861–1896.** *Palestine Exploration Fund, Quarterly Statement*, **1898.** p. 121–134. figs., 5 tables, refs. **NN**—Tables are constructed from observational data on atmospheric pressure since 1861. Diagrams show the mean reading of the barometer in every month and year and the departure above or below the mean from 1861–1896.

Results of meteorological observations taken at Jerusalem. *Ibid.*, p. 61. tables.

On the temperature of the air at Jerusalem . . . 1882 to 1896, and comparison with the temperature of the air at Sarona . . . 1882 to 1889. *Ibid.*, p. 183–205. 8 tables. *Subject Headings:* **Atmospheric pressure, Observational data, Temperature, Jerusalem, Sarona, Palestine.**

1899

2E–15 551.582(569.4)

*Zumoffen, S. J., **La météorologie de la Palestine et de la Syrie.** [Meteorology of Palestine and Syria.] *Société de Géographie, Bulletin*, Paris, 20:344–364, and 460–488, **1899.** 6 tables, refs. **NNA**—Observations of atmospheric pressure, temperature, rainfall, relative humidity, evaporation and wind are tabulated and discussed. Stations and observational periods are: Jerusalem (1861–1896); Tiberias (1890–1896); Jaffa (1880–1889); and Beirout (1876–1885). Possibility of climatic change since Biblical times is discussed. *Subject Headings:* **Climatology, Climatic changes, Jerusalem, Tiberias, Jaffa, Palestine, Beirut, Syria.**

1901

2E–16 551.582.1(56)

*Huntington, Ellsworth, **The climate of Harpoot, Turkey in Asia.** *Monthly Weather Review*, 29:250–253, **1901.** tables, refs. **NNA, DWB**—Tables contain climatological data for 1898–1900. Climate and peculiar phenomena, such as winter fog, are discussed, along with brief data and consideration of Euphrates Basin as a whole. *Subject Headings:* **Climatology, Harput, Turkey, Euphrates.**

2E–17 551.582(56)

*Riggenbach-Burckhardt, A., **Zum Klima von Ober-Mesopotamien.** [On the climate of upper Mesopotamia [Turkey].] *Meteorologische Zeitschrift*, 18:538–539, **1901.** table. **DWB, NN**—Results of H. Christ's observations in Urfa in 1900 are briefly tabulated and discussed. (*See item* 2E–29.) *Subject Headings:* **Climatology, Urfa, Turkey.**

1902

2E–18 551.577.2 551.576.2(56)

*Fitzner, Rudolf, **Niederschlag und Bewölkung in Kleinasien.** [Precipitation and cloudiness in Asia Minor.] *Petermanns Geographische Mitteilungen*, Ergänzungsheft, No. 140, **1902.** 90 p. fig., map, numerous tables, 27 refs. **DLC, NN**—Observational data given for various parts of Turkey, mainly from stations along railroads in: Anatolia; Smyrna to Kassaba; Smyrna to Aïden; and Mersina to Tarsus to Adana, for period 1894–1902. Precipitation and cloud observations, as well as some wind data, are also included. Distribution of precipitation in Turkey is discussed, and rain-wind roses are drawn for different sections. *Subject Headings:* **Precipitation, Cloudiness, Turkey, Near East.**

2E–19 551.582(56)

*Hann, Julius, **Klima von Konstantinopel.** [Climate of Constantinople.] *Meteorologische Zeitschrift*, 19:120–123, **1902.** 8 tables, refs. **DWB, NNA**—Brief survey made of meteorological observations available for Constantinople at that time along with some values of pressure, temperature and rainfall for various years. *Subject Headings:* **Climatology, Istanbul, Turkey.**

2E–20 551.577.3:551.583.2(569.4)

†*Hilderscheid, Heinrich, **Die Niederschlagsverhältnisse Palästinas in alter und neuer Zeit.** [Precipitation conditions of Palestine in ancient and modern times.] *Deutscher Palästina-Verein, Zeitschrift*, 25:5–105, **1902.** 4 plates, map, 40 tables, refs. **NN**—Rainfall conditions of Palestine are taken up in detail along with extensive observational data, collected at various stations in Palestine over varying periods of years. Reference made to mention of rainfall in the Bible and Mischna. Question of climate change during historical time in Palestine discussed. *Subject Headings:* **Precipitation, Historical climates, Palestine.**

1903

2E–21 551.582.1(569.4)

*Arvanitakis, G. L., **Essai sur le climat de Jerusalem.** [Essay on the climate of Jerusalem.] *Institut Egyptien, Bulletin*, Ser. 4, No. 4:128–189, March 2, **1903.** figs., tables, refs., equations. **NN**—Author reports on a year's detailed observations of climatic factors: relative humidity, clouds, wind, temperature and pressure means, etc. He also notes khamsins, hail, earthquakes, rainbows, etc. *Subject Headings:* **Climatology, Jerusalem, Palestine.**

2E–22 551.582(564)

*Bellamy, C. V., **Notes on the climate of Cyprus.** *Royal Meteorological Society, Quarterly Journal*, 29:29–46, **1903.** map, tables. **MH-BH, NN**—Physical features described. Discussion of records and instruments; of temperature, with a brief table for 1901; of humidity; radiation; rainfall, with tables for 1899–1902 at Nicosia and another for 6 stations in Cyprus 1881–1902; wind; and other phenomena such as storms, dust, snow, etc. 1900–1902. *Subject Headings:* **Climatology, Cyprus.**

2E–23 551.582.2(56)

***Climatological tables for Merzifoun, Turkey.** *Monthly Weather Review*, 25:245, **1897.** table. *Ibid.*, 31:25, 1903. tables. **NNA, DWB**—Results given of meteorological observations at Anatolia College, Merzifon, by J. J. MANISSADJAN: pressure, temperature, rainfall, by months, for 1897–1902. *Subject Headings:* **Climatological data, Merzifon, Turkey.**

2E–24 551.582(569.4)

*Watt, Andrew, **The climate of Hebron (in Syria).** *Scottish Meteorological Society, Journal*, 3rd Ser., 12(18–19):133–152, 1900–1901, (**1903**). 13 tables, refs. **NN, DWB**—Meteorological observations for 1896–1902 are discussed and tabulated, and reference is made to other observations kept at Hebron in previous years. *Subject Headings:* **Climatology, Hebron, Palestine.**

1904

2E–25 551.577.2 551.571(56)

*Hann, Julius, **Meteorologische Beobachtungen zu Smyrna 1890–1899.** [Meteorological observations at Smyrna 1890–1899.] *Meteorologische Zeitschrift*, 21:480, **1904.** table, ref. **DWB, NNA**—Summarized results are given of some French observations at Smyrna, 1890–1899, of rainfall and relative humidity. *Subject Headings:* **Precipitation, Relative humidity, Smyrna, Turkey.**

2E–26 551.582.2(56)

***Klima von Merzifun, Kleinasien.** [Climate of Merzifon, Asia Minor.] *Meteorologische Zeitschrift*, 21:187, **1904.** table, refs. **DWB, NNA**—Brief note refers to *Monthly Weather Review* data for Merzifon. (*See item* 2E–23.) Brief table gives summary of values for pressure, temperature and rain, 1896–1902. *Subject Headings:* **Climatology, Merzifon, Turkey.**

1905

2E–27 551.582(569)

*Kostlivý, Stanislav, **Untersuchungen über die klimatischen Verhältnisse von Beirut.** [Investigations of the climatic conditions of Beirut.] Prague, **1905.** 159 p. figs., 69 tables, refs. **NNA**—Early treatise on climate of area covering a 25 year period of observations and referring to earlier data sources as well as containing much climatological data. *Subject Headings:* **Climatology, Beirut, Lebanon.**

2E–28 551.582.1(569.4)

Paterson, Alexander, **Hebron and its climate.** *Scottish Meteorological Society, Journal*, Ser. 3, 13(23):20–26, **1905.** refs. **DWB, NN**—Generalized descriptive account, considering mostly type of weather accompanying winds from different directions. *Subject Headings:* **Climatology, Winds, Hebron, Palestine.**

1906

2E–29 551.506.1:551.582.1(56)

*Christ, H., **Klima von Urfa, Ober-Mesopotamien, nach sechsjährigen Beobachtungen.** [Climate of Urfa, upper Mesopotamia, from six years' observations.] *Meteorologische Zeitschrift*, 23:440, **1906.** tables. **DWB, NN**—Results of author's 6 years of observations, 1900–1905, at Urfa, are tabulated and discussed, including data for temperature, relative humidity, wind, rainfall.

Resultate der meteorologischen Beobachtungen zu Urfa im Jahre 1906. [Results of meteorological observations at Urfa in the year 1906.] *Ibid.*, 24:236, 1907. table. **DWB, NNA**—Addition to above observations giving monthly values for 1906. *Subject Headings:* **Climatology, Urfa, Turkey.**

1907

2E–30 551.582(56)

*Fitzner, Rudolf, **Beiträge zur Klimakunde des osmanischen Reiches und seiner Nachbargebiete.** [Contributions to the climatology of the Osman [Ottoman] Empire and its neighboring regions.]. **Pt. I. Meteorologische Beobachtungen in Kleinasien, 1902.** Berlin, 1904. **Pt. II.** (Same title) **1903.** Berlin, **1907.** extensive tables. **DWB, NN**—Air pressure, temperatures, precipitation, cloudiness and wind observations for region are tabulated in detail by stations for 1902 and 1903. *Subject Headings:* **Climatological data, Turkey, Near East.**

1908

2E–31 551.501.9(56)

Grothe, Hugo, **Meteorologische Stationen in der asiatischen Türkei.** [Meteorological stations in Asiatic Turkey.] *Beiträge zur Kenntnis des Orients*, Berlin, 6:149–154, **1908.** refs. **DLC**—Recent additions and former meteorological stations in this section of Asia Minor are briefly discussed along with some references to work done by various meteorologists on region. *Subject Headings:* **Observational networks, Turkey.**

2E–32 551.583.2(569.4)

†Huntington, Ellsworth, **The climate of ancient Palestine.** *American Geographical Society, Bulletin*, 40:513–522, 577–586, 641–652, **1908.** 6 figs., map, 55 refs. **NNA**—Sections discuss: climatic hypotheses of uniformity, deforestation, progressive change, and pulsatory changes; present climate and relief of Palestine; nature of the supposed changes of climate; and types of evidence to changes of climate. *Subject Headings:* **Historical climates, Climatic changes, Palestine.**

2E–33 551.582.1(56)

*Naab, J. P., **Das Klima von Diarbekr am Tigris, Ober-Mesopotamien.** [The climate of Diyarbakir on the Tigris, upper Mesopotamia.] *Beiträge zur Kenntnis des Orients*, Berlin, 6:154–164, **1908. DLC**—Author's climatological observations for Diyarbekir, Urfa, and some for Mosul, 1901–1905, are tabulated and discussed. Values for temperature, cloud, precipitation, hail, frost, thunderstorms, and wind are included. *Subject Headings:* **Climatology, Diyarbekir, Urfa, Turkey, Mosul, Iraq.**

1909

2E–34 551.582.1(569.4)

*Blanckenhorn, Max, **Studien über das Klima des Jordantals.** [Studies on the climate of the Jordan Valley.] *Deutscher Palästina-Verein, Zeitschrift*, 32:38–109, **1909.** plate, 38 tables, refs. **NN.** Reprint. **DWB**—Detailed survey is made of the climate of the Jordan Valley, using climatological data from numerous cities in Palestine: Tiberias, Jericho, Melhamiije, Kasr Hadschla, and Dead Sea area. Contents include consideration of atmospheric pressure, air temperature, temperature of the Dead Sea, wind conditions, cloud, precipitation, evaporation, and humidity. Data varies in amount for periods of from one to ten years. *Subject Headings:* **Climatology, Jordan Valley, Palestine.**

1910

2E–35 551.582(569.4)

*Exner, Felix M., **Zum Klima von Palästina.** [On the climate of Palestine.] *Deutscher Palästina-Verein, Zeitschrift*, 33:107–164, **1910.** 2 maps, tables, refs. **NN**—Many climatic data, collected at stations in Palestine 1891 to 1907, are tabulated, summarized and discussed. Temperatures for the various physical regions, including days with frost in Jerusalem, are presented, as well as rainfall by regions, years, seasons; humidity and evaporation; cloudiness; winds and accompanying precipitation; and air pressure. Map of rainfall and maps showing isobars in Jan. and July are appended opposite p. 168. *Subject Headings:* **Climatology, Palestine.**

2E–36 551.582.2(56)

Hann, Julius, **Klima von Merzifun (Kleinasien).** [Climate of Merzifon, Asia Minor.] *Meteorologische Zeitschrift*, 27:74, **1910.** table, refs. **DWB, NNA**—Table gives additional values for temperature, cloud and rain up until 1906. (*See items* 2E–23, 2E–25.) *Subject Headings:* **Climatology, Merzifon, Turkey.**

2E–37 551.582(56)

*Hann, Julius, **Zum Klima von Kleinasien.** [On the climate of Asia Minor.] *Meteorologische Zeitschrift*, 27:513, **1910.** table, refs. **DWB, NNA**—Brief table summarizes French meteorological observations at Mezere, 1901–1906, temperature, relative humidity, cloud and rainfall by months. *Subject Headings:* **Climatology, Mezere, Turkey, Near East.**

2E–38 551.582(56)

*Hann, Julius, **Zum Klima von Smyrna.** [On the climate of Smyrna.] *Meteorologische Zeitschrift*, 27:270–271, **1910.** tables, refs. **DWB, NNA**—Brief survey of some earlier climatological data sources for Smyrna, along with summary tables of some of this data, 1843–1907, including values for temperature, rainfall, frost, cloud, thunderstorms. *Subject Headings:* **Climatology, Smyrna, Turkey.**

1911

2E–39 551.583.2(569.4)

Huntington, Ellsworth, **Palestine and its transformation.** Boston, **1911.** 443 p. 9 figs., maps, refs., index. **NN**—Includes in a broad, geographical and historical survey of Palestine as a

whole, treatment of climate in ancient Palestine, fluctuations of the Dead Sea, and climate and history. *Subject Headings:* **Climatic changes, Historical climates, Geography, Palestine.**

1912

2E–40 551.521.11 551.576.2

†*Friedemann, Johannes, **Bewölkung und Sonnenschein des Mittelmeergebietes.** [Cloudiness and sunshine in Mediterranean region.] *Hamburg, Archiv der Deutschen Seewarte und des Marine-observatoriums, 35,* No. 2, **1912.** 96+p. 8 plates, 85 tables. **DLC, NNA**—Large amount of observational data on cloud and sunshine in the whole Mediterranean region (including eastern portion) has been collected, from meteorological stations and ships, and analyzed. Isonephs are drawn for different seasons. *Subject Headings:* **Cloudiness, Sunshine, Mediterranean.**

2E–41 551.582.2(56)

*Hann, Julius, **Zur Meteorologie von Kleinasien.** [The meteorology of Asia Minor.] *Meteorologische Zeitschrift,* 29:556, **1912.** table, ref. **DWB, NNA**—Brief table summarizes French meteorological observations in 1909 at Merzifon and Sivas: temperature, cloud, rain. *Subject Headings:* **Climatology, Merzifon, Sivas, Turkey.**

2E–42 551.552(262)

†*Krugler, Herbert, **Die Windverhältnisse im östlichen Mittelmeer und seinen Randgebieten.** [Wind conditions in the eastern Mediterranean Sea and its bordering regions.] Berlin, **1912.** 233 p. 14 figs., extensive tables, refs. **NNA**—Extensive observations of wind and some other meteorological conditions are recorded and discussed for entire region, including: Greece, Aegean, Marmara, Turkish coast and interior, Cyprus, coasts of Syria and Palestine, Sinai, northern Egypt, Suez, stations along Nile, Red Sea, Mesopotamia, Iran, and Persian Gulf. Charts give wind roses for every month and pressure regions for every month. Wind tables are appended for 133 stations. *Subject Headings:* **Winds, Atmospheric pressure, Eastern Mediterranean, Near East, Iran, Red Sea, Persian Gulf, Mesopotamia.**

2E–43 551.573(564)

Nicolls, E. H., **Memorandum of evaporation and summer in Cyprus.** *Cairo Scientific Journal,* 6:32–33, **1912.** 3 tables. **NNM**—Data are given from observing the actual lowering of the water level in an inland reservoir in the central plains of Cyprus (away from sea wind influence) in summer of 1911. Table of temperatures, solar and terrestrial radiation, dew point, relative humidity, winds, taken May–Oct. 1911, at Nicosia (inland) accompanies and supplements evaporation data. *Subject Headings:* **Evaporation, Climatological data, Nicosia, Cyprus.**

1913

2E–44 551.579.4(569.4)

*Masterman, E. W. Gurney, **Summary of the observations on the rise and fall of the level of the Dead Sea, 1900–1913.** *Palestine Exploration Fund, Quarterly Statement,* **1913.** p. 192–197. figs., refs. **NN**—The chart shows results of observations made on the varying level of the Dead Sea, 1900–1913. Preliminary data reports appeared by same author in: *Ibid.,* p. 83–95, 163–168, 280–281, 1904. figs., 4 tables, refs. And in: *Ibid.,* p. 42–45, 1913. table. *Subject Headings:* **Water level variations, Dead Sea, Palestine.**

2E–45 551.555.8(262)

Sandsturm im östlichen Mittelmeer. [Sandstorm in the eastern Mediterranean.] *Annalen der Hydrographie und Maritimen Meteorologie,* 41:544–545, **1913. DLC, NNA**—Wind, temperature and barometric conditions, May 5–6, the time of a sandstorm at sea off Port Said, 33°49′ lat., 25°9′ long., are given in brief notes. *Subject Headings:* **Sand storms, Eastern Mediterranean.**

1914

2E–46 551.583.2(569.4)

†Klein, Hugo, **Das Klima Palästinas auf Grund der alten hebräischen Quellen.** [The climate of Palestine on the basis of old Hebrew sources.] Halle, **1914.** 76 p. 54 refs. **NN**—Scholarly approach to the possibility of climatic change in Palestine with extensive references to ancient Hebrew works. *Subject Headings:* **Historical climates, Climatic changes, Palestine.**

1916

2E–47 551.582.1(262, 56)

*Great Britain, Admirality, **Notes on climate and other subjects in Eastern Mediterranean and adjacent countries.** London, **1916.** 300 p. 5 plates, extensive tables. At head of title: I. D.

1117. **DLC, NN**—Extensive climatological data of a ten-year period are given, along with some discussion of physical features, meteorological stations, climate, etc., of the various land and sea areas around the Eastern Mediterranean: Balkan Peninsula and Aegean Sea; Asia Minor; Cyprus, Syria, and Palestine; Mesopotamia and Persian Gulf; Egypt and Sinai; Cyrenaica, Tripoli and Malta. *Subject Headings:* **Climatology, Geography, Eastern Mediterranean, Near East, Balkans, North Africa.**

2E–48 551.582(262)

*Lyons, H. G., **The winter climate of the eastern Mediterranean.** *Royal Meteorological Society, Quarterly Journal*, 42:65–84, **1916.** 14 tables. **MH-BH, NN**—The principal climatic characteristics of the region are summarized: atmospheric and sea temperature, pressure, rainfall, snow, winds, gales and cyclonic storms. *Subject Headings:* **Climatology, Eastern Mediterranean.**

2E–49 551.577.2(262, 56)

§Eckardt, W. R., **Über die Ursachen der jahreszeitlichen Regenfälle im Mittelmeergebiet, besonders in den östlichen Mittelmeerländern.** [On the causes of the annual rainfall in the Mediterranean region, especially in the eastern Mediterranean countries.] *Zeitschrift für Balneologie, Klimatologie und Kurort-hygiene*, 9:101–106, 124–129, 140–146, 1916/1917. 6 figs., refs. **DLC**—*Subject Headings:* **Rainfall variations, Mediterranean, Eastern Mediterranean.**

1917

2E–50 551.577.32(262)

Eckardt, Wilhelm, **Die Ursachen der jahreszeitlichen Regenfälle im Mittelmeergebiet.** [The causes for the seasonal rainfall in the Mediterranean region.] *Petermanns Geographische Mitteilungen*, 63:180–182, **1917.** refs. **DLC, NNA**—Whole region considered; eastern part briefly. Temperature and large atmospheric pressure conditions are described and their effects analyzed. *Subject Headings:* **Rainfall variations, Mediterranean.**

2E–51 551.515.1 551.578(56)

Eckardt, W. R., **Über Zyklonenzug und Regenfall in Vorderasien.** [On cyclone movements and rainfall in the Near East.] *Zeitschrift für angewandte Meteorologie*, 34:157–168, **1917.** 2 figs., 19 refs. **DWB, NN**—Relations between cyclonic air mass movements and rainfall (in winter) in this region are explained with references, but no observational data are included. *Subject Headings:* **Air mass movements, Rainfall, Near East.**

2E–52 551.577(569.4)

*Exner, F. M., **Niederschlagsdaten aus Palästina.** [Precipitation data from Palestine.] *Meteorologische Zeitschrift*, 33:367, **1917.** 2 tables. **DWB, NN**—Brief monthly summary given in table of rainfall for 1914–1916 according to BLANCKENHORN. *Subject Headings:* **Precipitation, Palestine.**

1918

2E–53 551.54:551.577(262)

Eckardt, W. R., **Luftdruck und Regenfall im Mittelmeergebiet.** [Air pressure and rainfall in the Mediterranean region.] *Zeitschrift für angewandte Meteorologie*, 35:109–115, **1918.** 11 refs. **DWB, NN**—General descriptive account of Mediterranean climate including eastern section, referring to data sources, but not including any original data. *Subject Headings:* **Atmospheric pressure, Rainfall, Mediterranean.**

2E–54 551.582(56)

*Hann, Julius, **Das Klima von Konstantinopel.** [The climate of Constantinople.] *Petermanns Geographische Mitteilungen*, 64:115–118, **1918.** tables. **DLC, NNA**—Reviewed in *Geographical Journal*, 53:282–283, 1919. Author discusses a complete set of meteorological observations made at Scutari, 1865–1886. *Subject Headings:* **Climatological data, Üsküdar, Istanbul, Turkey.**

2E–55 551.543.1(56)

*Hann, Julius, **Der tägliche Gang des Luftdruckes in Smyrna.** [The daily range of air pressure in Smyrna.] *Meteorologische Zeitschrift*, 35:205–206, **1918.** table, ref. **DWB, NN**—Small amount of data given covering some early observations at Smyrna. *Subject Headings:* **Atmospheric pressure, Smyrna, Turkey.**

2E–56 551.577.2(569.4)

*Hann, Julius, **Über 68 jährige Niederschlagsmessungen in Jerusalem.** [On 68 years of precipitation measurement in Jerusalem.] *Meteorologische Zeitschrift*, 35:309–310, **1918.** 2 tables. **DWB, NN**—Monthly and yearly means of rainfall observations are tabulated for Jerusalem stations. *Subject Headings:* **Rainfall, Jerusalem, Palestine.**

2E–57 551.582.1(567)

Ward, Robert DeC., **Weather controls over the fighting in Mesopotamia, in Palestine, and near the Suez Canal.** *Scientific Monthly*, 6:291–304, April **1918.** 3 tables, refs. **NNA**—General descriptive account given of weather in region and its effects at the time of the British Expedition invasion of Mesopotamia from Persian Gulf, 1915. Some brief tabulated records of temperature at Baghdad, at Palestine, and brief mean annual rainfall records are included. *Subject Headings:* **Climatology, Military operations, Mesopotamia, Baghdad, Palestine.**

1919

2E–58 551.557(56)

*Georgii, Walter, **Ergebnisse von Pilotsaufstiegen im Küstengebiet des südöstlichen Mittelländischen Meeres.** [Results of pilot balloon ascents along the coastal region of the southeastern Mediterranean Sea.] *Beiträge zur Physik der freien Atmosphäre*, 8:170–178, **1919.** tables, refs. **DLC, NN**—Results of balloon ascents along the coast from Palestine to Egypt, April to Sept. 1916, are tabulated and discussed. Wind direction, velocity, and gradients are determined up to 10 km. or less. *Subject Headings:* **Upper air winds, Near East.**

2E–59 551.555.8(569.4)

*Georgii, Walter, **Scirocco Beobachtungen im südwestlichen Teile Palästinas.** [Sirocco observations in the southwestern part of Palestine.] *Meteorologische Zeitschrift*, 36:193–197, **1919.** fig., 4 tables. **DWB, NNA**—Personal observations of siroccos are reported. Some records of temperature, relative humidity, and wind direction and velocity kept. No thorough explanation claimed. *Subject Headings:* **Special winds, Sirocco, Palestine.**

2E–60 551.553.11(56)

*Hann, Julius, **Der Seewind im Golf von Smyrna (Imbad).** [The sea wind in the Gulf of Smyrna (Imbad).] *Meteorologische Zeitschrift*, 36:353–354, **1919.** tables. **DWB, NN**—Small amount of data given and explained on temperature and humidity conditions at Smyrna with and without a sea wind. *Subject Headings:* **Special winds, Climatology, Smyrna, Turkey.**

2E–61 551.577(569.4, 62)

Späth, W., **Auffällige Regenverteilung in Südpalästina und Ägypten.** [Remarkable distribution of rain in south Palestine and Egypt.] *Zeitschrift für angewandte Meteorologie*, 36:78–79, **1919.** fig. **DWB, NN**—Phenomena of winter rains in this area briefly explained. *Subject Headings:* **Rainfall, Palestine, Egypt.**

1920

2E–62 551.506.7:551.557(569.4)

*Bamford, J. A., **Some observations of the upper air over Palestine.** *Royal Meteorological Society, Quarterly Journal*, 46:15–33, **1920.** 7 figs., 8 tables, 2 refs. **MH-BH, NN**—Results summarized in tables and graphs of some upper air wind observations made over Palestine, 1917–1919. Air movements are analyzed with respect to monthly and seasonal variations in direction and velocity (horizontal and vertical). *Subject Headings:* **Upper air winds, Palestine.**

2E–63 551.577.3(569.4)

*Blanckenhorn, M., **Niederschlagsmengen einiger Palästina-Stationen in der Periode 1916/17 und 1917/18.** [Precipitation amount at several Palestine stations in the period 1916/17 and 1917/18.] *Meteorologische Zeitschrift*, 37:170, **1920.** table. **DWB, NN**—One of a number of summary tables sent to *Meteorologische Zeitschrift* by BLANKENHORN, giving rainfall monthly summaries for Haifa, Karmel, Nazareth, Umm el Amed, and Sarona. *Subject Headings:* **Precipitation, Observational data, Palestine.**

2E–64 551.577(569.4)

*Eredia, Filippo, **Le precipitazione acquee in Palestina.** [Rainfall in Palestine.] (*R.*) *Società Geografica Italiana, Bollettino*, Ser. 5, 9(7–10):259–270, **1920.** tables, refs. **DLC.** Reprint. **NNA**—Some data and discussion, using references rather than original observations. *Subject Headings:* **Rainfall, Palestine.**

2E–65 551.577.2(569.4)

*Exner, F. M., **Niederschlagsmengen einiger Palästina-Stationen in der Periode 1916/17 und 1917/18.** [Precipitation amount at several Palestine stations in the period 1916/17 and 1917/18.] *Meteorologische Zeitschrift*, 37:170, **1920.** table. **DWB, NN**—Monthly summaries of rain periods for these years tabulated briefly. *Subject Headings:* **Precipitation, Palestine.**

2E–66 551.578.4(569.4)

Hann, Julius, **Ausserordentlicher Schneefall in Jerusalem.** [Extraordinary snowfall in Jerusalem.] *Meteorologische Zeitschrift*, 37:204–205, **1920. DWB, NN**—Brief account of snow Jan. 9–10, 1920, in Jerusalem. *Subject Headings:* **Snow, Jerusalem, Palestine.**

2E–67 551.506.1(569.4)

*Knoch, K., **Meteorologische Beobachtungen vom Toten Meere. Aus dem Material der Expedition der Gesellschaft für Palästinaforschung nach dem Toten Meere 1911–12.** [Meteorological observations at the Dead Sea. From the report of the Palestine Research Society's expedition to the Dead Sea, 1911–12.] *Deutscher Palästina-Verein, Zeitschrift*, 43:109–137, **1920.** map, tables, refs. **NN**—Discussion and daily observational data from the winter-time expedition are included: air pressure, wind, temperature, humidity, cloud, rain, etc. *Subject Headings:* **Climatological data, Dead Sea, Palestine.**

2E–68 551.555.8(569.4)

Koschmieder, Harald, **Der Winterscirocco von El Fule.** [The winter sirocco of El Fule.] *Meteorologische Zeitschrift*, 37:156–159, **1920.** 4 figs., equation. **DWB, NNA**—Brief analysis of conditions for the occurrence of winter siroccos are given with mention of ground and upper winds and speeds, temperature, humidity, pressure, and cloudiness. *Subject Headings:* **Winds, Sirocco, El Fule, Palestine.**

2E–69 551.555.8(62)

Späth, W., **Die Sciroccos der Sinaiwüste.** [The siroccos of the desert of Sinai.] *Meteorologische Zeitschrift*, 37:26–29, **1920.** 5 figs., ref. **DWB, NNA**—Description of this phenomenon is given, and causes, topographical and meteorological, are suggested. *Subject Headings:* **Winds, Sirocco, Sinai, Egypt.**

1921

2E–70 551.506.1(569.4)

*American University of Beirut, Observatory, **Summary of the meteorological register of the observatory . . . Aug. 1915 to July 1921.** Beirut, **1921.** extensive tables. **DWB**—Tables summarize data for the 6 years. *Subject Headings:* **Observational data, Beirut, Syria.**

2E–71 551.582(26)(262)

*Germany. Marineleitung, **Handbuch für das Schwarze Meer.** [Handbook for the Black Sea.] 2nd ed. Berlin, **1921.** 680 p. 467 figs., tables. **DLC**—Section on: **Wind und Wetter,** p. 24–62. figs., tables. Summary given of wind, pressure, temperature, fog, cloud, rain, snow, ice and humidity conditions, with some tabulated data and charts illustrating seasonal conditions. Section on local weather signs for forecasting is quite comprehensive. Included is good summarized fog data for Black Sea. General summary is given by sections of the Black Sea coast. *Subject Headings:* **Climatology, Marine meteorology, Black Sea.**—*M.R.*

1922

2E–72 551.582(569.4)

*Baruch, Abraham and Rosenstein, A. B., **The climate of Jaffa-Telaviv-Sarona; with 45 meteorological tables . . . and 12 climatological tables in the Hebrew text.** Telaviv, **1922.** 19+p. 45 tables, 9 refs. In Hebrew, English summary. **NN**—Results of observations at these places between 1880–1917 are given in tables accompanied by a detailed discussion. Observations of rainfall, temperature, humidity, cloudiness, barometric pressure and wind direction and velocity are included. *Subject Headings:* **Climatology, Jaffa, Tel Aviv, Sarona, Palestine.**

2E–73 551.555(262)

*Paraskévopoulos, J. S., **The etesiens.** *Monthly Weather Review*, 50:417–422, **1922.** 2 figs., 5 tables. **NN, DWB**—These characteristics of summer north winds in the eastern Mediterranean are described: periodicity, direction, frequency, variations. Tables give numbers of days with etesians (1900–1914), as well as prevailing winds, barometric pressure means and other meteorological elements during etesians. Anemocinemographic records are given for a day with etesians and a day with prodroms. Origin, effects and prediction of etesians also taken up. *Subject Headings:* **Etesian winds, Eastern Mediterranean.**

2E–74 551.542:551.555(262, 56)

†*§Weickmann, Ludwig, **Luftdruck und Winde im östlichen Mittelmeergebiet.** [Air pressure and wind in the eastern Mediterranean region.] *Zum Klima der Türkei*, Munich, No. 1, **1922.** 114 p. 40 figs., 12 plates (synoptic charts), tables, refs. **DWB, NNA**—Author includes many

data and synoptic charts for entire region including: Balkans, Caucasus, Black Sea, western and southern coasts of the Near East, Crete and Cyprus, Turkestan and Caspian Sea, Mesopotamia and Persia, Syria and Palestine, Egypt, and some for Arabia. He discusses at length: air pressure conditions, movements, distribution, causes, etc. along with wind conditions, directions, velocities, peculiarities, etc. Table lists stations of above countries and periodicals in which observations regularly appear. *Subject Headings:* **Atmospheric pressure, Winds, Near East, Middle East, Mediterranean.**

1923

2E–75 551.55 551.577(56)

Eckardt, W. R., **Wind und Regenfall zu Konstantinopel.** [Wind and rainfall at Constantinople.] *Meteorologische Zeitschrift*, 40:147–148, **1923. NNA**—Brief descriptive account with no data included. *Subject Headings:* **Winds, Rainfall, Istanbul, Turkey.**

2E–76 551.524:551.555(559.4)

*Krichewsky, S., **Effect of wind direction on temperature at Jerusalem.** *Egypt, Ministry of Public Works, Physical Dept. Paper*, No. 10:9–15, **1923.** 8 tables. **NN, DLC**—Observational data, modern sources, and Biblical sources are examined to determine wind effects on weather in Palestine. Conclusions are drawn on the different winds at different seasons at Jerusalem. *Subject Headings:* **Winds, Temperature, Jerusalem, Palestine.**

2E–77 551.515.1:551.555.8(56)

*§Sutton, L. J., **A barometric depression of the khamsin type.** *Egypt, Ministry of Public Works, Physical Dept. Paper*, No. 10:1–9, **1923.** 12 plates, tables. **NN, DLC**—Sea and desert khamsins are identified and described in general; however, paper deals specifically with a desert depression of April 1 and 2, 1922. Detailed synoptic analysis given with charts and some data. *Subject Headings:* **Barometric depressions, Khamsin, Deserts, Near East.**

1924

2E–78 551.555.8 551.582(569.4, 62)

Conrad, V., **Zur Meteorologie und zum Klima von Ägypten und Palästina.** [On the meteorology and climate of Egypt and Palestine.] *Meteorologische Zeitschrift*, 41:397–399, **1924. DWB, NN**—Author comments on the 185 "Chamsin depressions" observed between 1907 and 1922. Frequency by months noted and the phenomena are analyzed. *Subject Headings:* **Climatology, Khamsin, Egypt, Palestine.**

2E–79 551.557(569.4)

*Koschmieder, Harald, **Die Ergebnisse der deutschen Höhenwindmessungen in Palästina 1917–1918.** [Results of German upper air wind measurements in Palestine 1917–1918.] *Zum Klima der Türkei*, Frankfurt, No. 3, **1924.** 30 p. 3 figs., 18 tables, refs. **DWB, NNA**—Observational stations and methods noted. Wind direction, velocity, vectors and variations are given. Wind system of Palestine is outlined including discussion of Palestine monsoon and comparison with Indian monsoon, and of daily land and sea winds in Palestine. *Subject Headings:* **Monsoons, Upper air winds, Palestine.**

2E–80 551.515.1(262)

Multanovskiĭ, B. P., **Nordostovye shtormy Chernogo moria i ikh znachenie dlia sinoptiki Evropy.** [The NE storms of the Black Sea and their importance to the synoptic meteorology of Europe.] *SSSR, Glavnoe Upravlenie Gidrometeorologicheskoĭ Sluzhby, Izvestiia*, 3:45–56, **1924.** 3 maps, 4 figs., refs. In Russian, German title and summary p. 55–56. **NN**—Synoptic aerological analysis made of this typical cold weather phenomenon, the NE storm of the Black Sea. Relations with synoptic conditions of Europe noted. Charts show storm tracks over Europe and Black Sea. Mention made of vegetation types around Black Sea, similar to Mediterranean climatic types. *Subject Headings:* **Synoptic meteorology, Storms, Black Sea.**

1925

2E–81 551.506.3(569.4)

*Baruch, Abraham, **Meteorological observations at Tel-Aviv in the years 1923 and 1924.** Tel Aviv, **1925.** 22 p. tables. **NN**—Results of the observations taken in 1922–23 of temperature, relative humidity, rainfall, wind, cloud, etc.; and of rainfall, 1922–23 and 1924–25, at Tel Aviv, are given. *Subject Headings:* **Climatological data, Tel Aviv, Palestine.**

2E–82 551.515.8(262)

Petitjean, L., **Sur une discontinuité stationnaire en Méditerranée occidentale.** [On a stationary discontinuity in the eastern Mediterranean.] *Académie des Sciences, Paris, Comptes Rendus*, 180:597–598, Feb. 23, **1925.** ref. **DWB, NN**—Formation and movement of this type of air mass, "occlusion," over the Mediterranean and its effects as to temperature, cloud, wind, sea conditions, etc., are briefly noted. *Subject Headings:* **Occlusions, Mediterranean.**

1926

2E–83 551.582 551.555.8(56)

†*§Zistler, Peregrin, **Die Temperaturverhältnisse der Turkei. Der Scirocco.** [The temperature conditions of Turkey. The sirocco.] *Zum Klima der Türkei*, Leipzig, No. 2, **1926.** 181 p. 56 figs., 7 plates (isotherm charts), extensive tables, refs. **DWB, NNA**—Thorough treatise with data of meteorological conditions of Turkey and of the Near Eastern area, mentioning several distinct climatic regions and discussing particularly the occurrence of the siroccos of different types, in different regions. This important work includes many data, synoptic charts and references, as well as extensive explanation and discussion. *Subject Headings:* **Climatology, Temperature, Sirocco, Turkey, Near East.**

1927

2E–84 551.586:599.9(569.4)

McCown, Chester C., **Climate and religion in Palestine.** *Journal of Religion*, 7–520–539, **1927.** refs. **NN**—Author describes the role of climate in the interplay of all factors in social development. Chapters discuss climate of Palestine: in ancient times; features today; healthfulness; productivity; and finally, effects on life and religion. Climate called important in shaping religious, social and economic developments. *Subject Headings:* **Climatology, Human ecology, Palestine.**

2E–85 551.506(262)

Meredith, H., **Meteorological conditions over the sea in the Eastern Mediterranean.** *Monthly Weather Review*, 55:407–409, **1927.** fig., table, refs. **NN, DWB**—Observations recorded here were made Oct. 14–16, 1926, between Alexandria and Malta; they consist of measurements of sea-surface temperatures, air temperature and relative humidity 21 ft. above surface, along with air temperature gradient between 13 and 71 ft. above sea level. *Subject Headings:* **Temperature, Relative humidity, Temperature gradient, Eastern Mediterranean.**

2E–86 551.501.9(56)

Réthly, Antal, **Törökország meteorológiai szolgálata.** [The organization of the meteorological service in Turkey.] *Időjárás*, 31:162–169, **1927.** 2 figs. German summary p. 189–190. **DLC**—Program and research of Turkish network of stations outlined. Map shows locations of various types of stations. *Subject Headings:* **Observational networks, Turkey.**

1928

2E–87 551.510.42:551.575(56)

Réthly, Antal, **Az angorai ködrol. Der Nebel als Klimafaktor von Angora.** [Fog as a climatic factor at Ankara.] *Földrajzi Közlemények*, Budapest, 56:105–110, **1928.** table. German summary p. 110. **NNA**—Discussion of fog and smoke situation in Ankara; considered serious. *Subject Headings:* **Fog, Smog, Atmospheric pollution, Ankara, Turkey.**

1929

2E–88 551.555(262)

Keeton, H., **Local winds, Mediterranean and Black Seas. II. Eastern Mediterranean.** *Marine Observer*, 6:110–111, **1929. NNA**—General descriptive accounts taking up regions individually: Adriatic, Ionian Sea; the Grecian Archipelago; Asia Minor, Syria, Egypt and Libia; Dardanelles, Sea of Marmara and Bosphorus and Black Sea. Winds are discussed generally with reference to their directions at different times of year, strength, variability, amount of calm, etc. No data given. *Subject Headings:* **Winds, Mediterranean, Black Sea, Near East.**

2E–89 551.501.9(56)

Réthly, Antal, **Das meteorologische Observatorium zu Angora.** [The meteorological observatory at Ankara.] *Beiträge zur Geophysik*, 24:381–383, **1929.** fig. **DWB, NNA**—Gives brief review of founding of observatory in the 1925, and the work accomplished. *Subject Headings:* **Meteorological observatories, Ankara, Turkey.**

1930

2E–90 551.577.2(569.4)

†*Ashbel, Dov, **Die Niederschlagsverhältnisse im südlichen Libanon, in Palästina und im nördlichen Sinai.** [Precipitation conditions in southern Lebanon, in Palestine and in northern Sinai.] Berlin, **1930.** 77 p. 25 figs., 17 tables, 50 refs. **NNA**—Thorough treatise on subject giving extensive tabulated data and references along with description of station network and analysis of meteorological factors. *Subject Headings:* **Precipitation, Observational data, Lebanon, Palestine, Sinai, Egypt.**

2E–91 551.509.31:551.575

*Bereskin, V. A., **Sinopticheskie usloviia obrazovaniia tumanov. Geograficheskoe rasprostranenie tumanov.** [Synoptical conditions of formation of fog. Geographical distribution of fogs.] *Geofizicheskiĭ Sbornik*, 7(2):3–30, **1930.** 18 figs., 6 tables. Russian and English titles, English summary. **NN**—Area investigated includes Black Sea and some of northern Turkey. This is the first paper on an investigation of synoptic conditions favorable and unfavorable to fog formation and deals with determining areas and seasons of most frequent continuous fogs. Figures present computed maps of fog made up from data of a network of stations. *Subject Headings:* **Fog, Synoptic studies, Black Sea, Turkey, Europe.**

2E–92 551.506.1(569.4)

*Blanckenhorn, Max, **Regenfall im Winter.** . . . [Rainfall in winter. . . .] *Deutscher Palästina-Verein, Zeitschrift*, Vols. 45–53, 1919/20 through **1929/30.** tables. **NNA**—In Vols. 49–52 articles are entitled, **Meteorologische Beobachtungen in Palästina.** They all include rainfall as well as temperature, cloud, and wind observations, and appear twice yearly. Most observations are in the form of tables listing data from Haifa, Jerusalem, Bethlehem and other stations of area. *Subject Headings:* **Rainfall, Observational data, Palestine.**

2E–93 551.515.8(569.4)

*§Durward, J., **Squalls at Amman, Transjordan.** *Royal Meteorological Society, Quarterly Journal*, 56:175–178, **1930.** 3 figs., table. **MH-BH, NN**—Account given of phenomenon and general weather situation at time of the two squalls during night of Sept. 4, 1929, at Amman. Synoptic chart for Sept. 3 and a table of upper winds 250–4750 feet, Sept. 1–7, are included. *Subject Headings:* **Squalls, Amman, Transjordan.**

2E–94 551.583.3(569.4)

Gregory, J. W., **Palestine and the stability of climate in historic times.** *Geographical Journal*, 76:487–494, **1930.** refs. **NN**—Some of the arguments for climatic changes toward greater aridity in Palestine in the past 3000 years are presented with references to noted climatologists on subject. No data. *Subject Headings:* **Historical climates, Climatic changes, Palestine.**

2E–95 551.524.3 551.577.3(56)

*Réthly, Antal, **Istanbul-Erenköi hömérséklete megfigyeléseiböl. (Kisázia 1875–1892).** [Temperature observations in Erenköi near Istanbul. (Asia Minor 1875–1892).] *Időjárás*, 34:178–184, **1930.** 10 tables, 2 refs. Summary in German p. 208–209. **NN**—Observations tabulated and analyzed for this 17-year period. Observations of Hann and Zistler compared. **Die Niederschlagsverhältnisse von Stambul-Erenköi. (Klein-Asien 1875–1892.)** [Precipitation conditions in Erenköi near Istanbul. (Asia Minor 1875–1892.)] *Földrajzi Közlemények*, Budapest, 56(9–10):213–229, 1928. 7 tables. German summary p. 225 229. **NNA**—*Subject Headings:* **Temperature, Precipitation, Erenköi, Istanbul, Turkey.**

1931

2E–96 551.579.4(569.4)

†*Enge, Johannes, **Der Anstieg des Toten Meeres 1880–1900 und seine Erklärung.** [The rise of the Dead Sea, 1880–1900, and its explanation.] *Zum Klima der Türkei*, Leipzig, No. 4, **1931.** 42 p. 9 figs., 8 charts, 7 diagrs., 12 tables, 22 refs. **DWB, NNA**—Detailed, well-illustrated paper explains variations in the surface level of the Dead Sea as related to variations in precipitation for surrounding regions, particularly Palestine and Syria, for the 20 year period. *Subject Headings:* **Water level variations, Precipitation variations, Dead Sea, Palestine, Syria.**

2E–97 551.515.1(479.2)

*Petzow, Georg, **Herkunft, Häufigkeit und Schicksal der von 1889 bis 1912 über dem Schwarzen Meer beobachteten Zyklonen.** [Origin, frequency, and track of cyclones observed over the Black Sea 1889–1912.] Inaug.-Diss.—Friedrich Wilhelm Universität zu Berlin. **1931.** 48 p. 8 figs.,

tables, 13 refs. **DWB**—Thorough discussion takes up each step of development in turn and gives comprehensive conclusions. Figures and tables illustrate pressure conditions and types, directions and number of disturbances. *Subject Headings:* **Cyclones, Black Sea.**

2E–98 551.582(56)

*Schneider, Karl, **Klimatologie von Armenien.** [Climatology of Armenia.] *Petermanns Geographische Mitteilungen*, 77:69–75, **1931.** 2 figs., 2 tables, 5 refs. **DLC, NNA**—Average of monthly observations for 1894 to 1903 from meteorological stations in Armenia are tabulated and discussed briefly. *Subject Headings:* **Climatology, Armenia.**

2E–99 551.506.1(56)

*Turkey. Meteoroloji Enstitüsü, . . . **Türkiyede Yağmur Vaziyeti Bültini, 1927, 1928, 1929, 1930.** Ankara, **1931.** 36 p. maps, tables. **DWB**—Includes summarized rainfall data, 1926–1930, many tables and maps. *Subject Headings:* **Precipitation, Observational data, Turkey.**

1932

2E–100 551.584.65(569.4)

*Buxton, P. A., **Climate in caves and similar places in Palestine.** *Journal of Animal Ecology*, 1:152–159, **1932.** 2 tables, 11 refs. **NNM**—Paper records some observations made in Palestine on temperature and humidity in caves and small cavities in rocks, during the height of the dry summer. Differences in saturation deficiency observed between air in spaces in a wall of a cave and outside are sufficient to be of considerable biological importance. A small amount of observational data is included. *Subject Headings:* **Microclimatology, Cave temperatures, Palestine.**

2E–101 551.577.2(56)

†*Reichel, Eberhard, **Die Niederschlagsverhältnisse der Türkei.** [Precipitation conditions of Turkey.] *Annalen der Hydrographie und Maritimen Meteorologie*, 60:353–362, **1932.** figs., 4 tables, 38 refs. **DLC, NNA**—Thorough discussion and presentation of data on precipitation in Turkey. Data comprise averages by months and year, 1927–1930, for stations all over Turkey. *Subject Headings:* **Precipitation, Turkey.**

2E–102 551.506.3(569.4)

*Salesian Agricultural School, Beitgemal, Palestine, **Meteorological summaries and averages of crops for twelve years, 1920–31.** Beitgemal, Palestine, **1932.** extensive tables. **NN**—Twelve years of meteorological observations have been accurately kept and are recorded completely in table form: pressure, temperature, hygrometry and evaporation, cloud amount, wind force and direction, and rainfall. *Subject Headings:* **Climatological data, Beitgemal, Palestine.**

1933

2E–103 551.582(569.4)

*Combier, Ch., **La climatologie de la Syrie et du Liban.** [Climatology of Syria and Lebanon.] *Revue de Géographie Physique et de Géologie Dynamique*, 6(4):319–346, **1933.** 12 figs., 2 tables, 9 refs. **NNA**—Meteorological observations taken at Ksara Observatory near Beirut, and at other stations in area are reported, including those of temperature, rainfall, winds, cloud cover, and relative humidity. Charts are drawn, and climate of region analyzed. *Subject Headings:* **Climatology, Syria, Lebanon.**

2E–104 551.582.1(5)

Lyde, Lionel W., **The continent of Asia.** London, Macmillan, **1933.** 777 p. figs., maps, refs. **NN**—Contents contain chapters on general climate; some special aspects of climate, major climatic provinces including Mediterranean area, Middle East, Central Asia, Far East, India, etc. Each country and region of Asia is taken up separately with climatic factors included. *Subject Headings:* **Climatology, Geography, Near East, Middle East, East Asia, India, Asia.**

1934

2E–105 551.524.3(569.4)

*Ashbel, Dov, **Temperaturabnahme zwischen dem Toten Meere und Jerusalem.** [Temperature decrease between the Dead Sea and Jerusalem.] *Meteorologische Zeitschrift*, 51:225–228, **1934.** 4 tables. **DWB, NNA**—Records for both places kept, and averages tabulated for hours and months; comparisons made and discussed. *Subject Headings:* **Temperature variations, Dead Sea, Jerusalem, Palestine.**

2E–106 551.582(262, 56)

†*§Clerget, Marcel, **Matériaux pour une étude climatologique de la Méditerranée orientale. Types de temps.** [Material for a climatological study of the eastern Mediterranean. Types of weather.] Cairo, **1934.** 70 p. 32 figs., tables, 63 refs. **NN**—Pressure centers for winter and summer are compared and contrast shown between meteorological conditions of land and sea. Climatic types are classified and explained. Tables giving data on wind, rain, relative humidity, cloudiness, and pressure types, are included. *Subject Headings:* **Climatology, Eastern Mediterranean.**

2E–107 551.515.8(56)

Line squalls and heavy rain in Iraq and Palestine on May 14th–15th, 1934. *Meteorological Magazine, London*, 69:185–191, **1934.** 2 figs. **DLC, NN**—Synoptic conditions for days previous to storms in region analyzed. Anemograms and barograms shown. *Subject Headings:* **Line squalls, Rainfall, Iraq, Palestine.**

2E–108 551.555.8(569.4)

*Ashbel, Dov, **Der Scirocco (Hamsin) Palästinas.** [The sirocco (khamsin) of Palestine.] *Folia Medica Orientalia, Sectio 1: Folia Medicinae Internae Orientalia*, Jerusalem, 1(3–4):249–268, **1934–35.** 6 figs., 12 tables, 6 refs. German, English and French summaries. Reprint. **DGS, NNA**—Meteorological conditions on khamsin days in Palestine are noted: weak sun rays, high temperatures, low relative humidity, high evaporation, easterly winds, etc. *Subject Headings:* **Winds, Khamsin, Palestine.**

1935

2E–109 551.524.31(569.4)

*Ashbel, Dov, **The temperature at Jerusalem, Oct. 1930–Oct. 1935.** *Jewish Palestine Exploration Society, Bulletin*, [2]:93–106, [**1935**]. 3 figs., tables, 6 refs. In Hebrew, English summary. Reprint. **NNA**—Mean hourly temperature recorded at Hebrew University, Jerusalem, for five years and averaged. Charts show average temperature curves of November and June and hourly mean temperatures for year (1930–1935); also a graph of "sharp end of a Hamsin." *Subject Headings:* **Temperature, Khamsin, Jerusalem, Palestine.**

2E–110 551.577:551.513(56)

†*§Bauer, G., **Luftzirkulation und Niederschlagsverhältnisse in Vorderasien.** [Circulation of air and conditions of precipitation in southwest Asia (Near East).] *Beiträge zur Geophysik*, 45:381–548, **1935.** 13 figs., 34 maps, tables, 70 refs. **DWB, NNA**—A major contribution to the meteorological study of south-west Asia. Using observations 1895–1924 the author explains air mass growth, decay, and movements, precipitation distribution, and especially the relations between the climate of south-west Asia and the overall circulation system of the earth. Meteorological analysis includes bordering regions of India, Iran, Russia, Egypt and southeastern Europe. Also included are detailed discussion and maps of air pressure and air mass movements by seasons and months and of precipitation by months. Influence of seas, continental air masses, and local wind phenomena and systems noted. Hundred and twenty observation stations used. *Subject Headings:* **Air mass movements, Precipitation, U.S.S.R., India, Iran, Egypt, Near East.**

2E–111 551.555.8(569.4)

Combier, Ch., **Sur la constitution des vents de sable en Syrie.** [On the formation of sand storms in Syria.] *Académie des Sciences, Paris, Comptes Rendus*, 200:1232–1233, **1935.** 2 refs. **DWB, NN**—Three types of dust in the atmosphere are identified for Syria: "brume de sable" (sand haze) which occurs in the springtime with khamsin weather; "tourbillons de sable" or dust devils which occur especially in summer; and "vents de sable" or sand storms which occur in desert regions all year round. Latter described briefly as to characteristics, forecasting and effects on aviation. *Subject Headings:* **Sand storms, Dust devils, Syria.**

2E–112 551.582(569.4)

*Comissopoulos, N., **Contribution à l'étude de la climatologie physiologique et médicale du Liban; le climat de Meyrouba, Kesrouân.** [Contribution to the study of physiologic and medical climatology of Lebanon; the climate of Meyrouba, Kesrouân.] *Faculté Française de Médecine et de Pharmacie, Annales*, Beirut, 4(5):279–302. **1935.** 3 figs., 7 tables. **DSG.** Reprint. **NN**—General survey of climate of Meyrouba during summer of 1933 given. Temperature and humidity observations tabulated. *Subject Headings:* **Climatology, Medical meteorology, Meyrouba, Kesrouân, Lebanon.**

2E–113 551.577.37(569.4)

Floods and heavy rain in Transjordan. *Meteorological Magazine, London*, 70:161–162, **1935.** photo. **DLC, NN**—Synoptic conditions for week previous to flood of Feb. 6 are analyzed. *Subject Headings:* **Floods, Rain intensity, Transjordan.**

2E–114 551.521.11:551.573(56)
*Réthly, Antal, **Sonnenscheindauer und Verdunstung in Ankara.** [Sunshine duration and evaporation in Ankara.] *Meteorologische Zeitschrift*, 52:31–33, 1935. 2 tables. **DWB, NN**—Summary tables and brief discussion given of observations of sunshine and evaporation which were made in Ankara 1926–1933. *Subject Headings:* **Sunshine, Evaporation, Ankara, Turkey.**

1936

2E–115 551.553.1 551.552(569.4)
Ashbel, Dov, **Conditions of the winds on the western and southern shores of the Sea of Galilee.** *Meteorological Magazine, London*, 71:153–155, **1936.** 2 figs. **DWB, NN**—Winds described and causes analyzed; summer, winter and local winds taken up. *Subject Headings:* **Winds, Sea of Galilee, Palestine.**

2E–116 551.573(569.4)
*Ashbel, Dov, **Evaporation in Palestine.** *Palestine Journal of Botany and Horticultural Science*, Rehovat Ser., 1(3):8–26, 1935–**1936.** 3 figs., 15 tables. In English. **NBG**—Available data on evaporation measurements at various regions in Palestine taken by a piche tube are summarized. In all parts of the country evaporation amount exceeds precipitation amount. Evaporation is found to be in relation to temperature. Effects of sirocco on evaporation noted. *Subject Headings:* **Evaporation, Palestine.**

2E–117 551.574.41(569.4)
Ashbel, Dov, **On the importance of dew in Palestine.** *Palestine-Oriental Society, Journal*, 16:316–321, **1936.** 2 tables, 6 refs. Reprint. **NNA**—Discussion of dew in general along with limited observations of dew in Palestine, noting plants as different dew producers and number of dewy nights by months for 1933–1935. *Subject Headings:* **Dew, Palestine.**

2E–118 551.521.63(569.4)
Ashbel, Dov, **The ultra-violet radiation in Jerusalem.** *Harefuah, the Medical Journal of the Palestine Jewish Medical Association*, 11, No. 8(62), Aug. **1936.** 2 p. 2 figs., table. **DLC.** Reprint. **NNA**—Measurements made by acetone-methylene blue method of Leonard Hill. Mean monthly values obtained for Jerusalem. *Subject Headings:* **Radiation, Ultraviolet light, Jerusalem, Palestine.**

2E–119 551.506(262,539.3)
†*§Great Britain. Meteorological Office. **Weather in the Mediterranean.** London, H. M. Stationery Office, **1936–1945.** 3 Vols. M. O. 391a, b, and c. **DWB**—Vol. I. **General information.** 218 p. 144 figs., tables, refs. Deals with general character of the weather in the Mediterranean as a whole: distribution and variations of chief weather factors, cyclones, anticyclones and air masses. Vol. II. **Local information.** Pt. 10. **Aegean Sea.** 67 p. 10 tables, 7 figs., 18 refs. Pt. 11. **Crete to Palestine and Syria.** 106 p. 9 figs, 11 tables, 21 refs. Part 12. **Red Sea.** 97 p. 13 figs., plate, 7 tables, 26 refs. Meteorological conditions, (temperature, wind, visibility, thunderstorms, etc.), for each area are discussed, illustrated, and extensive observational data tabulated. Important lists of references are given for each area. All known sources of meteorological information are claimed to have been drawn upon. Vol. III. **Aids to forecasting.** 2nd ed. 102 p. (chiefly synoptic charts). Large detailed analyzed synoptic charts of Europe and the Mediterranean area illustrate important weather situations. Discussions accompany each series of charts, and many useful aids to synoptic map analysis and single station and synoptic forecasting are given. *Subject Headings:* **Climatological data, Weather forecasting, Eastern Mediterranean, Aegean Sea, Red Sea.**

2E–120 551.555(479.2)
Starov, D., **Brizy Chernogo moria.** [Breezes of the Black Sea.] *Zapiski po Gidrografiii*, No. 1:69–91, **1936.** 16 figs., 2 tables, about 6 refs. **NNA**—*Subject Headings:* **Winds, Black Sea.**

1937

2E–121 551.575(569.4)
Ashbel, Dov, **The fogs which ascend from the Dead Sea to the mountains of Jerusalem.** *Meteorological Magazine, London*, 72:29–32, March **1937.** 4 figs. **DLC, NN**—Explanation of meteorological causes of phenomena and some original observations are given. *Subject Headings:* **Fog, Dead Sea, Jerusalem, Palestine.**

2E–122 551.521.12(569.4)
*Ashbel, Dov, **The intensity of the sunrays at Jerusalem, measured at Mt. Scopus at the Hebrew University.** Jerusalem, **1937.** 93 p. extensive tables, ref. **DWB**—Report consists entirely of tabulated records of measurements begun Nov. 1930, along with brief explanatory introduction. *Subject Headings:* **Radiation measurements, Sunshine, Jerusalem, Palestine.**

2E–123 551.582(262):656.6

*Great Britain. Hydrographic Office, **Mediterranean Pilot. Vol. V. Comprising the coasts of Libya, Egypt, Palestine and Syria; the southern coast of Turkey, and the island of Cyprus.** 3rd ed. London, **1937.** 215 p. figs., map, tables, refs. **DWB**—Chapter I. General remarks on region, including pressure and winds, climate, currents and pilot information. Chapters then take up regions individually, principally from the point of view of sailing directions. Meteorological tables appear in appendix III, p. 188–196. *Subject Headings:* **Climatology, Marine meteorology, Mediterranean, Palestine, Syria, Turkey, Cyprus, Libya, Egypt.**

2E–124 551.557 551.553.6(56, 62)

*Great Britain. Meteorological Office, **Monthly normals and percentage frequencies of surface and upper winds over Malta, Egypt, Palestine, Trans-Jordan and Iraq, mainly between the years 1921 and 1932.** London, **1937.** 49 p. tables. M.O. 405. **NN**—Tables are given of monthly summaries of the percentage frequencies of winds of various speeds and directions at selected heights in the upper air (1500, 3000, 6000, 10,000 ft.) as observed at these stations. *Subject Headings:* **Winds, Upper air winds, Malta, Egypt, Palestine, Transjordan, Iraq.**

1938

2E–125 551.577.37:551.515.1(569, 539)

§Ashbel, Dov, **Great floods in Sinai Peninsula, Palestine, Syria and the Syrian desert, and the influence of the Red Sea on their formation.** *Royal Meteorological Society, Quarterly Journal*, 64:635–639, **1938.** 3 figs., ref. **MH-BH, NN**—Figures show pressure and winds over region: prevailing summer and winter types. Floods in region may be attributed to influence of barometric lows from Red Sea. *Subject Headings:* **Floods, Winds, Atmospheric pressure, Red Sea, Sinai, Palestine, Syria.**

2E–126 551.578.1:551.506.3(569.4)

*Ashbel, Dov, **Rainfall tables for Palestine and adjacent countries.** Jerusalem, Hebrew University, Meteorological Institut, **1938.** 125 p. tables. **NNA**—Extensive data source of monthly and annual rainfall observations in Palestine, Sinai, Transjordan, southern Lebanon and the part of Syria bordering Palestine. *Subject Headings:* **Rainfall, Observational data, Palestine, Near East.**

2E–127 551.577.2(569)

*Ashbel, Dov, **The rains in the winter of 1936–37.** *Palestine Oriental-Society, Journal*, 18:17–23, **1938.** 2 tables. **NN**—Author discusses rainfall of that winter as remarkable for its monthly distribution. Tables show percentage of monthly rainfall by months for that winter as well as in percents of a normal year at numerous stations. *Subject Headings:* **Rainfall, Palestine.**

2E–128 551.582(569.4)

*Comissot, N. A., **Aperçu sommaire de la météorologie et de la climatologie de la Syrie et du Liban.** [Summary of meteorology and climatology of Syria and Lebanon.] *Faculté Française de Médecine, Journées Médicales 9–13 Mai 1938, Comptes Rendus*, Beirut, Vol. 2, [**1938**]. 8 p. 4 figs., 3 tables. **DSG.** Reprint. **NN**—General survey of climatic conditions. Tables give mean maximum and minimum temperatures by districts for region. *Subject Headings:* **Climatology, Syria, Lebanon.**

2E–129 551.557(564)

*Durward, J., **Upper winds at Nicosia (Cyprus).** *Great Britain, Meteorological Office, Professional Notes*, 6, No. 87, **1938.** 12 p. 12 figs., 10 tables. **NNA**—Results of observations for two years, 1934–1935, at varying altitudes for each month are tabulated and discussed. Charts show constancy and direction of wind at different heights. *Subject Headings:* **Upper air winds, Cyprus.**

2E–130 551.506:551.582(569.4, 262, 62)

†*Egypt. Ministry of Public Works, Physical Dept., **Climatological normals for Egypt and the Sudan, Cyprus and Palestine.** Cairo, **1938.** 148 p. figs., maps, extensive tables, 6 p. of refs. **NNA**—Report contains normal values for nearly a hundred meteorological stations and over a hundred rainfall stations, mostly in Egypt, but among them seven meteorological stations in Palestine. Values for temperature, relative humidity, vapor pressure, cloud amount, rainfall, wind and evaporation are given in extensive tables. *Subject Headings:* **Climatological data, Egypt, Sudan, Cyprus, Palestine.**

2E–131 551.506.1(569)

*Great Britain. Meteorological Office, **Meteorological observations at Amman, Transjordan, during the year 1936.** London, **1938.** table. **NNA**—Single sheet gives table containing observa-

tions of mean pressure; air temperature; vapor pressure, relative humidity, cloud; rainfall; days of rain, hail, thunder, fog, clear and overcast sky, and gale; and wind, for each month of year. *Subject Headings:* **Observational data, Amman, Transjordan.**

2E–132 551.586:63(569.4)

Imberger, Karl, **Die deutschen Landwirtschaftlichen Kolonien in Palästina.** [The German agricultural colonies in Palestine.] *Tübinger Geografische und Geologische Abhandlungen*, Öhringen, **1938.** 126 p. maps, tables, 31 refs. **DA**—Chapter on climate and hydrography, p. 15–20, gives a very brief and general description of the climate of Palestine and its effect on hydrographic conditions. A table presents the absolute maximum and minimum and annual mean temperatures in 1930, for Jerusalem, Tel Aviv, Haifa, Beersheba and Jericho. The seasonal march of winds and rainfall is described qualitatively. *Subject Headings:* **Agricultural climatology, Palestine.**

2E–133 551.577.32(569.4)

*Köppen, W., **Die Winterregenzeit 1935–1936 in Palästina und Syrien.** [The winter rainy period 1935–1936 in Palestine and Syria.] *Meteorologische Zeitschrift*, 55:27–33, **1938.** 3 tables. **DWB, NNA**—Discussion includes tables giving monthly values of rainfall for some 25 selected stations. Mean temperatures for 1935–1936 also given for Tel Aviv, Jerusalem, Jericho. *Subject Headings:* **Rainfall, Palestine, Syria.**

2E–134 551.524.2(56)

*Reichel, E., **Temperaturkarten der Türkei.** [Temperature charts of Turkey.] *Annalen der Hydrographie und Maritimen Meteorologie*, 66:213–220, **1938.** figs., 5 tables, 9 refs. **DLC, NNA**—Figures are temperature charts by months using observations from author's works. Tables give monthly and yearly mean temperatures for different stations arranged by region in Turkey. *Subject Headings:* **Temperature, Turkey.**

2E–135 551.582(262)

Rouch, J., **Le climat de la Méditerranée.** [The climate of the Mediterranean.] *Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée, Rapports et Procès-Verbaux des Réunions*, 11:219–282, **1938.** 57 figs. **NNA**—Conditions of temperature, barometric pressure, atmospheric humidity, winds, local winds, barometric depressions, waterspouts, are discussed and illustrated on diagrams for both eastern and western Mediterranean. Separate chapters take up depressions of the eastern Mediterranean, climate of the Adriatic and climate of the Black Sea; the latter includes consideration of temperature, barometric pressure, winds, rain, clouds and fogs. *Subject Headings:* **Climatology, Mediterranean, Adriatic Sea, Black Sea.**

1939

2E–136 551.582(569.4)

Ashbel, Dov, **The climate of the Judean Desert.** *Jewish Palestine Exploration Society, Bulletin*, 6(2):66–81, **1939.** 7 figs., 9 tables, 4 refs. In Hebrew, English summary p. I–II. **NNJ**—The reason that the region between the mountains of Judah and the Jordan Valley is a desert is explained as due to the warming and drying of the winds as they descent the mountain slopes into the valley. Figures and tables illustrate climatological conditions. The formation of canyons and riverbeds indicates that the region had more abundant water in ancient times. *Subject Headings:* **Climatology, Climatic changes, Judean Desert, Palestine.**

2E–137 551.588(569.4)

*Ashbel, Dov, **The influence of the Dead Sea on the climate of its neighborhood.** *Royal Meteorological Society, Quarterly Journal*, 65:185–194, **1939.** 5 figs., 3 tables. **MH-BH, NN**—Topography of Dead Sea is described. Shows how difference in depth and area between northern and southern basin is reflected in thermal relations with the surrounding land in variation of sea breeze, resulting in a morning maximum and midday minimum temperature. Data tabulated on wind direction and velocity, with autographic records of temperature and humidity and brief particulars of precipitation, over varying periods 1931–1937. *Subject Headings:* **Climatology, Dead Sea, Palestine.**

2E–138 551.556:551.468.4

Ashbel, Dov, **A peculiar phenomenon of the Dead Sea; the floating lines of foam.** *Geographical Review*, 29:128–131, **1939.** 6 figs., table, 6 refs. **NNA**—Author attributes foam lines to discontinuities between bodies of water. Influence of wind is considered briefly, but article contains little of meteorological interest. *Subject Headings:* **Winds, Foam, Dead Sea.**

2E–139 551.577.37(56)

*Ashbel, Dov, **The very exceptional rainy season of 1937–38 in Palestine and the Near East.** *Palestine-Oriental Society, Journal*, 19:48–58, **1939.** table. **NN**—Unusually heavy rains for the region are discussed. Table gives percent of the season's amount by months for that winter for mountains, coastal plain, El Amk, plain of Jezreel; for Transjordan, Syria and Iraq; inner Turkey; western and south-western Turkey; eastern Turkey and Armenia; Black Sea; Alexandria, El Arish, and Khan Junis. *Subject Headings:* **Rainfall, Palestine, Transjordan, Syria, Iraq, Turkey, Armenia, Black Sea.**

2E–140 551.588.2 551.582(56)

*Lembke, Herbert, **Klima und Höhenstufen im nordostanatolischen Randgebirge.** [Climate and altitude levels in the northeastern mountain border of Turkey.] *Gesellschaft für Erdkunde zu Berlin, Zeitschrift*, No. 5–6:171–184, July **1939.** 3 figs., table, 37 refs. **NNA**—Detailed map of area between Trabzon and Gümüsane shows vegetation and cultivation types. Table gives monthly rainfall and temperature means for stations in region for varying periods of years. Snowfall also shown. Paper is concerned mainly with the aspects of vegetation type in relation to climate. Bibliography emphasizes references to vegetation and land use. *Subject Headings:* **Climatology, Plant ecology, Turkey.**

2E–141 551.579.4(569.4)

Mazloum, S., **Analyse des composantes de l'Euphrate en Syrie.** [Analysis of the components of the Euphrates in Syria.] *Académie des Sciences, Paris, Comptes Rendus*, 208:756–758, **1939.** 2 figs., table, ref. **DWB, NN**—Flow of Euphrates in Syria observed 1925–1927 at Djerablous and Deir-ez-Zor. Seasonal variations recorded and briefly analyzed and related to temperature and rainfall observations. *Subject Headings:* **Water level variations, Climatology, Euphrates, Syria.**

2E–142 551.578.1(569.4)

Mazloum, Soubhi, **La composante annuelle de la pluie en Syrie et au Liban.** [The annual component of rain in Syria and Lebanon.] *Académie des Sciences, Paris, Comptes Rendus*, 208:458–460, Feb. **1939.** map, table. **DWB, NNA**—Observations of nearly 50 rain meters in Syria and Lebanon, Iraq, Palestine, and Transjordan are analyzed by method of M. H. Labrouste. Rainfall map of Syria, Lebanon and Palestine included, entitled: **Propagation de la composante annuelle de la pluie en Syrie et au Liban.** [Distribution of the annual component of rain in Syria and Lebanon.] *Subject Headings:* **Rainfall, Syria, Lebanon, Palestine, Iraq, Transjordan.**

2E–143 551.524.32(569)

Mazloum, Soubhi, **La composante annuelle de la temperature en Syrie et au Liban.** [The annual component of the temperature in Syria and Lebanon.] *Académie des Sciences, Paris, Comptes Rendus*, 208:1921–1924, **1939.** map, table, 3 refs. **DWB, NNA**—Analagous study is made of temperature. (*See item* 2E–142.) Temperature means for 45 stations in Syria and Lebanon and Iraq, Turkey, Jordan, Palestine, are briefly tabulated. Three temperature regions are outlined for Syria. *Subject Headings:* **Temperature, Syria, Lebanon, Near East.**

2E–144 551.515:551.582(262)

*Schamp, Heinz, . . . **Luftkörperklimatologie des griechischen Mittelmeergebietes; Beiträge zu einer Klimatologie des östlichen Mittelmeeres.** [Air mass climatology of the Grecian Mediterranean region; contributions to the climatology of the eastern Mediterranean.] *Frankfurter Geographische Hefte*, 13, No. 1, **1939.** 75 p. 8 figs., plate, tables, 55 refs. **NN**—Good observational data are included from stations in Greece itself (mainly Naxos and Athens) as part of a study of air mass movements and over-all climatic characteristics of the eastern Mediterranean region. This work deals mainly with Greece. *Subject Headings:* **Climatology, Air masses, Greece, Eastern Mediterranean.**

1940

2E–145 551.506.1(569.4)

*Ashbel, Dov, **Meteorological observations for the year 1939 taken at the Hebrew University, Mt. Scopus.** Jerusalem, **1940.** 84 p. numerous tables, 3 refs. Mimeographed. In Hebrew and English. **NNA**—Preface explains tables which record: bi-hourly barometric pressure, wind-direction and velocity, relative humidity, soil and air temperature, hourly and daily evaporation, daily rainfall and sunray intensity. *Subject Headings:* **Observational data, Mt. Scopus, Jerusalem, Palestine.**

2E–146 551.577.2(56)

Ashbel, Dov, **Rainfall map of the Near East.** Jerusalem, Hebrew University Press, **1940. NNA** —Map shows yearly averages for Turkey, Palestine, Syria, Armenia, parts of Iraq, Iran. Reviewed

in *Geographical Review*, 32:673–674, 1942. This third edition of the map uses data for period 1859–1938. Regional contrasts and effects of relief shown. A smaller-scale inset map carries data south to the Gulf of 'Aqaba, and another shows number of rainy days. *Subject Headings:* **Rainfall, Near East.**

2E–147 551.587 551.582.1(262)

Étude climatologique sur le bassin méditérranéen. [Climatological study of the Mediterranean Basin.] *France, Office National Météorologique, Étude* No. 1, Paris **1940.** 108 p. 28 plates. Unchecked. *Subject Headings:* **Climatology, Mediterranean.**

2E–148 551.582(26) (262, 56)

*§Germany. Kriegsmarine, Oberkommando, **Mittelmeer—Handbuch. V Teil. Die Levante.** [Mediterranean—Handbook, Part 5. The Levant.] Berlin, **1940.** 488 p. 131 figs., tables. **Klima und Wetter.** [Climate and weather.] p. 24–40. **DLC**—Brief summary of temperature, pressure, wind, thunderstorms, cloud, fog, storms, etc., in eastern Mediterranean, given. Special winds are treated in detail and synoptic charts presented to show typical storm conditions. *Subject Headings:* **Climatology, Marine meteorology, Eastern Mediterranean.**—*M.R.*

2E–149 551.579(569)

†*Ionides, M. G., **Report on the water resources of Transjordan and their development.** London, **1940.** 372 p. 108 figs., 98 plates, 42 tables, 92 refs. **NNA**—Report is made of the Hydrographic Survey of Transjordan, containing mostly observations and records condensed into statistical form with analysis, and investigation of water development possibilities, irrigation, etc. Included is a 20-page, well illustrated chapter on climate with data on rainfall, temperature, relative humidity, all well-organized and analyzed. References are mainly hydrological, with some geological and climatological. *Subject Headings:* **Climatology, Hydrology, Transjordan.**

2E–150 551.577.2(56)

†*Lembke, Herbert, **Eine neue Karte des Jahresniederschlages im westlichen Vorderasien.** [A new chart of annual precipitation in western Near East.] *Petermanns Geographische Mitteilungen*, 86:217–225, **1940.** chart, 4 tables, 11 refs. **DLC, NNA**—Large chart in color of rainfall amounts in western Asia Minor (Turkey, Armenia, Syria, Palestine) is attached. Article describes briefly precipitation distribution, types, and causes. Tables give monthly and annual means of precipitation for different regions. *Subject Headings:* **Precipitation, Turkey, Armenia, Syria, Palestine, Near East.**

1941

2E–151 551.577.2(569.4)

Arden-Close, Charles Frederick, **The rainfall of Palestine.** *Palestine Exploration Quarterly*, London, 73:122–128, **July 1941.** fig., table. **NNA**—Reprinted in author's *Geographical by-ways*, London, 1947. Rainy season of Palestine is discussed with reference to Biblical implications of climate and D. ASHBEL's rainfall map of Palestine (published 1941). Good general explanation, but little data. *Subject Headings:* **Rainfall, Historical climates, Palestine.**

2E–152 551.578:551.579(569.4)

*Ashbel, D., **Rain and water conditions in the Negev.** *Jewish Palestine Exploration Society, Bulletin*, 8:45–60, Jan.–Mar. **1941.** fig., tables. In Hebrew, English summary p. I. **NNZ**—Rain and water conditions discussed, and good data presented. Author is convinced that no change in climate of this part of Palestine has occurred during the last 3000 years. *Subject Headings:* **Rain, Hydrology, Climatic changes, Negeb, Palestine.**

2E–153 551.583.2

Botley, Cicely M., **Climate and weather in the Bible.** *Victoria Institute, Journal of the Transactions*, 73:212–235, **1941.** 3 figs., 7 refs. Discussion. **NNA**—Quotations of meteorological interest from the Bible are discussed in the light of present meteorological knowledge of the region of the Near East. *Subject Headings:* **Historical climates, Near East.**

2E–154 551.582.1:629.13(56)

*Germany. Reichsamt für Wetterdienst, **Flugklimatische Übersicht über die Turkei.** [Aviation climatological survey of Turkey.] Berlin, **1941.** 13 p. fig., 2 tables. **DWB**—Report surveys climate of Turkey in general, outlining climatic regions, and discussing wind, cloud, seasonal differences. Tables give data for temperature and precipitation. *Subject Headings:* **Aviation climatology, Turkey.**

2E–155 551.582.1:629.13(56, 479.2)

*Germany. Reichsamt für Wetterdienst, **Flugklimatische Übersicht der Schwarzmeerländer.** [Aviation climatological survey of the Black Sea countries.] Berlin, **1941.** 20 p. 10 figs., tables. **DLC**—Pressure and temperature conditions are discussed; visibility and fog; cloud and type of weather; precipitation, amount, intensity and distribution, and frequency of: mean monthly pressure, mean wind direction, temperature, cloud, precipitation, number of thunderstorm days, and general disturbances according to seasonal pressure regions. *Subject Headings:* **Aviation climatology, Black Sea, Turkey.**

2E–156 551.582:656.6(262)

*Great Britain. Hydrographic Office, **Mediterranean Pilot. Vol. IV. Comprising the islands of the Grecian Archipelago with the adjacent coasts of Greece and Turkey from Cape Tainaron on the west to Kara Burun on the east; including also the island of Kriti.** 7th ed. London, **1941. DWB**—Unchecked. Contains sailing directions for the region as well as some descriptions, derived from Admiralty surveys, of winds and climate, and meteorological tables for Athens, Smyrna, Saloniki and Khania. *Subject Headings:* **Climatology, Marine meteorology, Mediterranean, Greece, Turkey.**

1942

2E–157 551.573 551.579(569)

Abd-El-Al, Ibrahim, **Étude du ruissellement et de l'évaporation dans la Békaa.** [Study of runoff and of evaporation in Bekáa.] *Beirut, Université St. Joseph, École Française d'Ingenieurs, Publications Techniques et Scientifiques*, No. 1, [**1942?**] Unchecked. *Subject Headings:* **Evaporation, Runoff, Bekáa, Lebanon.**

2E–158 551.521.1:551.525(56)

*Ashbel, Dov, **Solar radiation and soil temperature.** Jerusalem, **1942.** 125 p. 82 figs., tables, 6 refs. In Hebrew, with title and list of contents and illustrations in English. **NN**—Part I takes up solar radiation: instruments used, types of exposures, ultraviolet, etc. Part II. discusses soil temperature: gives regional division of soil temperature in Palestine, and comparison of soil temperatures in Palestine with those of Egypt, Lebanon, Syria, Turkey, Caucasus, central Europe, and Leningrad. *Subject Headings:* **Solar radiation, Soil temperature, Palestine, Near East, Egypt, Leningrad, Europe.**

2E–159 551.582(56, 55)

*Germany. Reichsamt für Wetterdienst, **Flugklimatische Übersicht über die Türkei, den Kaukasus und die nördlichen Teile von Syrien, Irak und Iran.** [Aviation climatological survey of Turkey, the Caucasus and the northern parts of Syria, Iraq, and Iran.] Berlin, **1942.** 16 p. maps, figs., 13 tables. **DWB**—Thorough analytical treatment of weather conditions of region including discussion, data and charts for pressure, cloud, precipitation, wind, and synoptic conditions. *Subject Headings:* **Aviation climatology, Turkey, Caucasus, Syria, Iraq, Iran.**

2E–160 551.582:656.6(479.2)

Great Britain. Hydrographic Office, **The Black Sea pilot; comprising Canakkale Bogăzi, Marmara Denizi, Karadeniz Bogazi, Black Sea, and Sea of Azov.** 9th ed. London, **1942.** 453 p. **DWB**—Unchecked. *Subject Headings:* **Climatology, Marine meteorology, Black Sea.**

2E–161 551.582.1(56, 47)

Murray, J. J., **The climate and weather of Turkey and southern Russia.** Submitted for meteorological seminar, California Institute of Technology. Pasadena, **1942.** 18 p. 7 figs., table, 10 refs. **DWB**—Generalized descriptive treatment based on standard sources. The somewhat similar climates of Turkey, Ukraine and the region of the Caucasus are described. General circulation of the atmosphere in the region is shown on charts. Table gives averages of temperature, precipitation, and pressure, in southern Russia and Ukraine, and of temperature and precipitation for Istanbul, Sulina and Smyrna. *Subject Headings:* **Climatology, Turkey, Ukraine, Caucasus, U.S.S.R.**

2E–162 551.506:656.6(262)

*U. S. Hydrographic Office, **Sailing directions for the Mediterranean. Vol. 4. Libya, Egypt, Turkey (south-coast), Syria, Palestine, and the islands of Crete, Scarpanto, Rhodes, and Cyprus.** H.O. No. 154 A. Washington, **1942.** 352 p. map, tables, refs. Supplement, 1950. 36 p. **NN, DLC**—Meteorological tables, Appendix III, p. 293–315, contain data from selected stations in above countries and in the ocean area for from 4 to 60 year periods on temperature, relative humidity, rainfall, wind, haze. Data procured from numerous sources. Main section of book, however, contains mainly sailing directions for numerous harbors and waterways of region. Chapter

I (p. 15–56) contains descriptive remarks on region including notes on winds and weather, as well as on currents, tides, pilotage, etc. *Subject Headings:* **Marine meteorology, Pilot guides, Climatological data, Hydrography, Eastern Mediterranean.**

2E–163 551.582.1:629.13(56)

*U. S. Weather Bureau, **A brief summary of weather factors as they affect military operations in Turkey, the Middle East and southeastern Europe.** [by L. R. Fletcher] *U. S. Air Weather Service, Report* No. 278, **1942.** 62 p. map, 36+tables. *U. S. Weather Bureau, Special Report* No. 184, 1942. **DWB**—Contents include discussion of topography and climate of the Balkans, Hungary and Egypt as well as the Eastern Mediterranean countries. General climatic considerations, synoptic weather, surface, upper air and local winds, visibility, temperature, precipitation, and comparison with U. S., included in discussion of Eastern Mediterranean countries. *Subject Headings:* **Aviation climatology, Eastern Mediterranean, Balkans, Hungary, Egypt.**

2E–164 551.582:629.13(56)

*§U. S. Weather Bureau, **Flying conditions in Egypt, Syria, Hungary and the Balkans in general.** [by A. W. Marks, G. C. Bristow, and C. E. Lamoureux] *U. S. Air Weather Service, Report* No. 123, **1942.** 46 p. 15 figs., 16 tables, refs. *U. S. Weather Bureau Special Report* No. 66, 1942. **DWB**—For the eastern Mediterranean countries contents include: general weather, depressions, air masses, surface, upper air, and special winds, cloudiness and ceilings, visibility, temperature, precipitation, comparison with U. S. and location of stations, well-illustrated by extensive tables, diagrams, and synoptic charts. *Subject Headings:* **Aeronautical climatology, Egypt, Syria, Hungary, Balkans.**

2E–165 551.577.2(569)

*U. S. Weather Bureau, **Maximum and minimum monthly precipitation figures for selected stations in France, Syria, Argentina, Palestine and Transjordan.** [by W. W. Reed] *U. S. Air Weather Service, Report* No. 109, **1942.** 3 p. tables. *U. S. Weather Bureau Special Report* No. 72, 1942. **DWB**—Report consists of tables for different regions giving precipitation maximum, minimum and mean values for varying periods of years in different countries. *Subject Headings:* **Precipitation, Syria, Palestine, Transjordan, Argentina, France.**

2E–166 551.577.2(569)

*U. S. Weather Bureau, **Precipitation data for Pamir Post, U.S.S.R., Damascus, Aleppo, Palmyra, Hassetche, and other Syrian stations; and the Saw, Vestervig, Odense and Copenhagen, Denmark.** [by W. W. Reed] *U. S. Weather Bureau Special Report* No. 18, **1942.** 3 p. tables. **DWB**—Maximum and minimum averages by month for 13 years for Pamir Post; and values of total precipitation by month for 1928–1939 at Damascus and Palmyra, and for 1933–1939 at Hassetche and Aleppo (Syria), are tabulated. *Subject Headings:* **Precipitation, Pamir Post, Tadzhik S.S.R., Damascus, Aleppo, Palmyra, Hassetche, Syria, Denmark.**

1943

2E–167 551.582(262)

Conrad, V., **The climate of the Mediterranean region.** *American Meteorological Society, Bulletin*, 24:127–145, **1943.** 18 figs., refs. Spanish summary, p. 170. **MH-BH**—Characteristic factors of Mediterranean climate as a whole are given and illustrated. Full physical explanation of these features, as based on the conditions of pressure distribution and the main streamlines of the air, is included. Among the important local climatic features presented are: rains in the desert; winter easterlies of Palestine; ranges of temperature in the deserts; and air mass analysis of the sirocco. *Subject Headings:* **Climatology, Sirocco, Mediterranean.**

2E–168 551.582:63(56)

Dix, M., **Acker- und Pflanzenbaufragen in der Türkei.** [Agriculture and plant growing in Turkey.] *Landwirtschafliche Jahrbücher*, 93:1–47, **1943.** figs., tables. German, English, French, Italian and Spanish summaries. **NN.** Rev. by K. Keil in *Zeitschrift für angewandte Meteorologie*, 61:99–100, 1944. **DWB**—Paper is mainly agricultural in scope, but includes important climatological conditions that must be considered in developing the region. Continuous process of desiccation in the spring and warming of soil for 6 meters, determined. Rainfall and topographic influences taken up, as well as irrigation, effects of climate on different crops and other agricultural considerations. *Subject Headings:* **Agricultural meteorology, Turkey.**

2E–169 551.576.2(262) 551.521.11

Gorczyński, Wladyslaw, **Sunshine and cloudiness in the Mediterranean basin.** *American Meteorological Society, Bulletin*, 24:183–193, **1943.** 3 figs., 3 tables, 9 refs. **MH-BH**—What little sunshine and cloud observations available for the region are summarized. Only a small amount of data are included for the eastern Mediterranean region. *Subject Headings:* **Sunshine, Cloudiness, Mediterranean.**

2E–170 551.585.53(56)

Tanoğlu, Ali, **Indices d'aridité de la Turquie.** [Evidence of the aridity of Turkey.] *Turk Coğrafya Dergisi*, 1(1):39–41, **1943.** map, equation. **NNA**—Climatic regions of Turkey are calculated and defined on map according to aridity. *Subject Headings:* **Aridity, Climatology, Turkey.**

2E–171 551.582.3(5)

U. S. Quartermaster Corps, Climatology Unit, **Climate zones. Asia . . .** U. S. Army Map Service, **1943.** 12 leaves. maps. **NNA**—Climatic zones shown for all parts of Asia for each month. *Subject Headings:* **Climatology, Asia, Near East, Middle East, East Asia.**

2E–172 551.582.2(56, 581)

*U. S. Weather Bureau, **Climatic data for selected stations in and near Afghanistan and Turkey.** [by M. H. Frankel.] *U. S. Air Weather Service, Report* No. 371, **1943.** 19 p. extensive tables. *U. S. Weather Bureau Special Report* No. 242, **1943. DWB**—Values tabulated for numerous stations in region: temperatures, duration of frost, precipitation, rain and snow, cloud amount, wind direction, velocity, gales, fogs. Years of records vary from 1 to 38. *Subject Headings:* **Climatology, Climatological data, Turkey, Afghanistan.**

1944

2E–173 551.579:551.582.2(569)

*Ashbel, Dov, **Fifteen years observations on the climatology and hydrography of the Dead Sea.** Jerusalem, Hebrey University, [**1944**]. 144 p. numerous tables. Mimeographed. **NNA**—Extensive climatic tables give hourly, daily and averaged data on temperature, relative humidity, wind velocity, frequencies, direction and evaporation. Hydrographic data include sea level variations, specific gravity, sea surface temperature and rainfall at Dead Sea, north and south. Map shows meteorological stations on Sea. *Subject Headings:* **Climatological data, Hydrography, Dead Sea, Palestine.**

2E–174 551.582(262)

†*Biel, Erwin R., **Climatology of the Mediterranean area.** *Chicago, University, Institute of Meteorology, Miscellaneous Reports*, No. 13, **1944.** 180 p. map, 55 tables, 11 pg. of refs. **NN**—Eastern Mediterranean region included. Author takes up: pressure and wind, including pressure patterns, air masses, sirocco, wind directions, upper winds, etc.; precipitation, distribution, frequency, thunderstorms, snowfall, etc.; water vapor content and relative humidity; cloudiness and fogs; temperature, sea, air, ranges, insolation, etc. An extensive bibliography is included with references for the entire region of the Mediterranean. *Subject Headings:* **Climatology, Climatological data, Mediterranean Region.**

2E–175 551.509.3 551.589.1:551.515.8(262)

***§A report of synoptic conditions in the Mediterranean area.** *Chicago, University, Institute of Meteorology, Miscellaneous Reports*, No. 14, **1944.** 113 p. 57 figs., tables, refs. **NNC**—Contents include:

I. Riehl, Herbert, **Introduction.**
II. Fowler, E. C., Bryson, R. A. and Riebel, H. W., **The air masses of the Mediterranean.**
III. Smith, H. N. and White, F. D., **Weather conditions in the Mediterranean region during periods of high index over Europe.**
IV. Allen, P. W., **Effect of northwest flow pattern on the Mediterranean weather.**
V. Allen, P. W., **Effect of southwest flow pattern on the Mediterranean weather.**
VI. Riehl, Herbert, **Special forecasting problems of northern and central Italy.**

Papers deal mainly with central Mediterranean conditions, but extensive synoptic charts include eastern region. *Subject Headings:* **Synoptic studies, Mediterranean Region.**

2E–176 551.582(569)

Fish, W. B., **Climate and vegetation.** *Geographical Review*, 34:240–244, **1944.** 2 figs., 2 tables, ref. **DLC, NNA**—General discussion of climate. Figures show general pressure distribution for winter and summer in the eastern Mediterranean and charts of maximum and minimum temperatures at Beirut and Ksara. Two short tables show rainfall by months 1936–1942, at Beirut, Tripoli, Jezzin, Ksara, and Riyaq. *Subject Headings:* **Climatology, Lebanon.**

2E–177 551.577.3(262)

Mazloum, Soubhi, **De la variabilité des pluies dans le bassin oriental de la Méditerranée.** [The variability of rainfall in the eastern basin of the Mediterranean.] *Beirut, Université St. Joseph, École Française d'Ingénieurs, Publications Scientifiques et Techniques*, No. 5, **1944.** 49 p.

refs. p. 45–49. Available at Royal Meteorological Society Library, London. Unchecked. *Subject Headings:* **Rainfall variations, Eastern Mediterranean.**

2E–178 551.582(56)

*U. S. Air Weather Service, **Climate of Smyrna. (Turkey.)** Prepared . . . from climatic data furnished by Statistics Division, U. S. Weather Bureau. *General Climatic Information Guide*, No. 9, rev., June **1944.** 12 figs., table. **NNA**—Region of western Turkey described briefly. Records for from 10 to 52 years are used. General climatic conditions are noted and shown graphically: air masses, temperature, precipitation, cloudiness, fog and visibility, winds. Tables give military implications of climatic conditions. Maps show topography and soil trafficability. *Subject Headings:* **Climatology, Smyrna, Turkey.**

1945

2E–179 551.506.3:551.578(569)

*Ashbel, Dov, **Hundred years of rainfall observations. (1844/5–1944/5.)** Jerusalem, **1945.** 217 p. extensive tables, 20 refs. **NN**—Survey of the last hundred years of rainfall observations in Near East conducted. Mostly only more recent observations are available except for Port Said and Palestine. Data for Transjordan, Syria and Lebanon, and Iraq are included also. *Subject Headings:* **Rainfall, Climatological data, Near East.**

2E–180 551.524 551.571(56)

*Ashbel, Dov, **Temperature and relative humidity in Palestine and surrounding countries.** Jerusalem, **1945.** 86 p. extensive tables, 10 refs. In Hebrew and English. **NN**—Detailed observations of temperature and relative humidity, kept at numerous stations in and near Palestine for periods of 20 years or less, appear in tables. *Subject Headings:* **Temperature, Relative humidity, Observational data, Palestine, Near East.**

2E–181 551.543(569, 567)

Chevrier, Jean, **Ondes de pression à Ksara et à Bagdad.** [Pressure waves at Ksara and at Baghdad.] *Beirut, Université St. Joseph, École Française d'Ingénieurs, Publications Scientifiques et Techniques*, No. 6. [1945–] Unchecked. *Subject Headings:* **Pressure waves, Ksara, Lebanon, Baghdad, Iraq.**

2E–182 551.582(569.1)

*Combier, Charles, **Aperçu sur les climats de la Syrie et du Liban avec carte au millionième des pluies et vents.** [Study of the climates of Syria and Lebanon with a map to the millionth of rain and winds.] Beirut, **1945.** 31 p. 7 figs., tables. **NNA**—Author discusses climate of Syria and Lebanon in the light of expanding and more adequate network of meteorological stations. Illustrations and data are given as well as a map which appears separately. Map shows meteorological and rainfall stations, isohyets, and polygon of wind direction frequency. *Subject Headings:* **Climatology, Rainfall, Winds, Syria, Lebanon.**

2E–183 551.577.3:63:616(569)

de Terra, Helmut, **Rainfall periodicity in relation to malaria and agriculture in the Near East.** *Science*, 101:629–631, **1945.** fig., 6 refs. **NN**—Author attempts to show that rainfall periodicity can be used in the prediction of epidemics and crop failures. (*See item* 2E–186.) *Subject Headings:* **Rainfall, Periodicities, Medical meteorology, Agricultural meteorology, Palestine.**

2E–184 551.582.2(56)

*Jewish Agency for Palestine, Economic Research Institute, **Statistical handbook of Middle Eastern countries, Palestine, Cyprus, Egypt, Iraq, the Lebanon, Syria, Transjordan, Turkey.** Jerusalem, **1945.** 166 p. tables. **DWB**—Temperature and rainfall averages for 1938, 1939, given for each country, along with statistics on numerous other social, political, etc. subjects. *Subject Headings:* **Climatological data, Palestine, Cyprus, Egypt, Iraq, Lebanon, Syria, Transjordan, Turkey.**

2E–185 551.582(56)

†*U. S. Weather Bureau, **Climate of Southwestern Asia. . . .** *U. S. Air Weather Service Report* No. 410, (*U. S. Weather Bureau P. R.* No. 1, rev.) Washington, **1945.** 206 p. 91 figs., 35 tables, 4 p. of refs. **DWB**—A general climatic survey of weather conditions for flying operations in region. An extensive discussion of climate, topographic and weather conditions is made; seasonal conditions of all climatic elements (ceilings, icing, visibility, etc.) discussed at length. *Subject Headings:* **Climatology, Aviation climatology, Near East, Middle East.**

1946

2E–186 551.577.3:616

Ackerknecht, Erwin H. and Carter, George F., **Malaria and rainfall periodicity in Palestine.** *Science*, 103:342–344, March 15, **1946.** table, refs. **NN**—Authors point out that no definite relations can be determined between rainfall maximum and malaria epidemics in Palestine and criticize H. DE TERRA'S conclusions on such relations as over-simplified. (*See item* 2E–183.) Important strictures on the use of rain statistics in predicting malaria epidemics are pointed out. *Subject Headings:* **Rainfall, Periodicities, Medical meteorology, Palestine.**

2E–187 551.515.8:551.515.1(262)

El-Fandy, M. G., **Barometric lows of Cyprus.** *Royal Meteorological Society, Quarterly Journal*, 72:291–306, Oct. **1946.** 13 figs., 3 refs. **DWB, NN**—Regeneration of shallow secondaries, stationary near Cyprus for some time, is explained and illustrated by synoptic charts. Lows are usually accompanied by a strong south-east current over Iraq. Known seasonal features of the Mediterranean region are also shown, which are associated with the southward extension from summer to winter of the zone of barometric depressions and by other large continental pressure areas. *Subject Headings:* **Air masses, Cyprus, Mediterranean, Near East, Iraq.**

2E–188 551.579(569.4)

Ionides, M. G., **The perspective of water development in Palestine and Trans-jordan.** *Royal Central Asian Society, Journal*, 33:271–280, **1946.** Discussion. **NNA**—Plants and problems of amounts and use of water in this region are surveyed. No data included. Effects on agriculture and industry pointed out. *Subject Headings:* **Hydrology, Palestine, Transjordan.**

2E–189 551.582(569)

*Konikoff, A., **Climate and distribution of rainfall.** (In: **Trans-Jordan; an economic survey.** Jerusalem, **1946.** p. 13–16. 2 tables.) **Monthly mean temperature and relative humidity, comparative statement of seasonal rainfall, 1934/35–1943/44.** *Ibid.*, p. 103–105. 2 tables. **NNA**—General character of the climate discussed and some data included. *Subject Headings:* **Climatology, Rainfall, Transjordan.**

2E–190 551.586:63(569)

*Nuttonson, Michael Y., **Agricultural climatology, physical belts, and crop ecology of Palestine and Trans-Jordan and their climatic analogues in the United States.** *U. S. Dept. of Agriculture, Office of Foreign Agricultural Relations, Foreign Agriculture Report*, No. 14, Sept, **1946.** 23 p. map, tables, 95 refs. **DA, NNZ.** Paper appears condensed as: **Agroclimatology and crop ecology of Palestine and Transjordan and climate analogues in the United States.** *Geographical Review*, 37:436–456, July 1947. fig., 3 tables, 36 refs. **DLC, NNA**—Study organizes, defines and analyzes the various distinct agroclimatic conditions in region and compares them with agroclimatic conditions in the U.S.A. Meteorological data of all available weather stations in Palestine and Transjordan and of comparable U. S. stations are the main source of material, as well as some crop, ecological, and physiographic data. Elements of comparison are mean monthly and yearly temperatures; average monthly, seasonal and yearly precipitation; precipitation effectivity indices and ratios (Thornthwaite method); relative humidity; and latitudes, plus study of phenological data. *Subject Headings:* **Agricultural climatology, Palestine, Transjordan, United States.**

2E–191 551.506(569.4)

*Palestine, Government, **A survey of Palestine; prepared in Dec. 1945 and Jan. 1946 for the information of the Anglo-American Committee of Inquiry.** Palestine, **1946.** 1139 p. index. **NNZ**—Climate, which is included among numerous subjects, is considered in relation to animal health and to clothing. Tables are included giving rainfall, temperature and relative humidity data for 1935–1944; means, mean maximum and minimum, and absolute maximum and minimum for each year. *Subject Headings:* **Climatology, Palestine.**

2E–192 551.586:612(569.4)

Wittkower, W. J., **Climate and industrial buildings in Palestine.** *Association of Engineers and Architects in Palestine, Journal*, 7:2–6, Aug. **1946.** In Hebrew, English summary p. 8–9. **NNZ**—Problems and means are discussed for maintaining comfortable working conditions year-round in industrial buildings in Palestine. *Subject Headings:* **Bioclimatology, Heating and ventilating, Palestine.**

1947

2E–193 551.506.3(56.53, 55)

*Clayton, Henry Helm, **World weather records: collected from official sources.** *Smithsonian Miscellaneous Collections*, Vol. 79, 90, and 105, 1927, 1934, **1947.** extensive tables. **NNA**—

Pressure, temperature, and precipitation data are included for Arabia, Iran, Iraq, and Syria, under major heading Asia, for years prior to 1927; from 1921 to 1930, and from 1931 to 1940. *Subject Headings:* **Climatological data, Arabia, Iran, Iraq, Syria.**

2E–194 551.577.2(569)

Feige, R. and Rosenau, E., **Rainfall in Palestine and Transjordan.** (In: Palestine, Dept. of Land Settlement and Water Commissioner, Geology and Water Resources of Palestine, **1947.** Appendix p. 1–7. fig., map, 4 tables, 59 refs. [of hydro-geologic interest].) **NNA**—Remarks are based on attached 1946 addition of the Average rainfall map of Palestine and Transjordan for the period 1901–1930. *Subject Headings:* **Rainfall, Palestine, Transjordan.**

1948

2E–195 551.579(569)

†*Abd-el-Al, Ibrahim, **Le Litani; étude hydrologique.** [The Litani; hydrologic study.] Beyrout, **1948.** 166 p. 86 figs., 46 plates, 17 tables, 53 refs. **NNA**—Important hydrologic study of a principal river of the Lebanon, the Litani; of developments completed and of those planned or still needed. Considerations of precipitation, runoff and evaporation as well as the physical, geographical and geological aspects are included. *Subject Headings:* **Climatology, Hydrology, Litani River, Lebanon.**

2E–196 551.582:551.579(56)

Combier, Charles, **Essai d'une formule de classification des climats du Levant.** [Essay on a classification formula for climates of the East.] *Beirut, Université St. Joseph, École Française d'Ingénieurs, Publications Techniques et Scientifiques*, No. 14:7–27, **1948.** 22 figs., 12 refs., equations.

Abd-el-Al, Ibrahim, **L'aridité et l'écoulement dans les pays du Moyen-Orient.** [Aridity and runoff in the land of the Near East.] *Ibid.*, p. 29–49. 23 figs., 16 refs., equations. **NNA, DLC**—Review in *Geographical Review*, 40:171, 1950. These analytical works appear simultaneously as studies of the climatology and hydrography of the Near East. Their aim is to determine by means of mathematical formulas, the geographical distribution, monthly and annual, of rain and atmospheric humidity. Combier applies the formula of L. Emberger, modified: the empirical expression concerned gives the "hygrothermic quotient" of a place. Climograms from this formula furnish a better picture of climatic characteristics. Maps show lines of equal aridity in Jan., April, July, and Oct.

Abh-el-Al uses De Martonne's "index of aridity" to show climatic and hydrographic zones of Syria and Lebanon. *Subject Headings:* **Climatology, Hydrography, Syria, Lebanon, Near East.**

2E–197 551.515.1:551.515.4(62, 569.4, 569.1)

§El-Fandy, M. G., **The effect of the Sudan monsoon low on the development of thundery conditions in Egypt, Palestine and Syria.** *Royal Meteorological Society, Quarterly Journal*, 74(319):31–38, Jan. **1948.** 8 figs., 2 tables, 2 refs. **DWB**—Describes changes of pressure, wind system and cloud types during the formation of the Sudan monsoon low of autumn. These lows usually result in thunderstorms or fog. Concludes that the Mediterranean as well as the Red Sea supplies moisture for the thundery cloud formation. *Subject Headings:* **Air masses, Thunderstorms, Egypt, Palestine, Syria.**—*M. L. R.*

2E–198 551.577.21(569)

Fish, W. B. and Dubertret, L., **Carte pluviométrique du Moyen Orient au deux millionième.** [Rainfall chart of the Middle (Near) East to the two millioneth.] *Études Géologiques et Géographiques sur le Liban, la Syrie, et le Moyen Orient, Notes et Mémoires*, 4:115–121, 1945–**1948.** 4 figs., map, 4 refs. **DGS**—Explanation given as to the sources of data and construction of the large scale rainfall map which accompanies this brief article. *Subject Headings:* **Rainfall, Near East.**

2E–199 551.582(569)

§Fish, W. B., **Premières notes sur la météorologie de la Syrie et du Liban.** [Preliminary remarks on the meteorology of Syria and Lebanon.] *Études Géologiques et Géographiques sur le Liban, la Syrie, et le Moyen Orient, Notes et Mémoires*, 4:91–114, 1945–**1948.** 11 figs., table, 6 refs. **DGS**—From three year observations, 1942–1945, author states that climate of Syria and Lebanon must be considered separately from that of Palestine. Article discusses: topography of region general meteorological characteristics, air masses, fronts, synoptic situations, atmospheric pressure, sand storms, cloudiness in summer and winter, aerological conditions, winds, land and sea breezes, pressure gradients, anabatic winds, effects of relief, local variations, and conditions for flying. *Subject Headings:* **Climatology, Syria, Lebanon.**

2E–200 551.582(495)

†*Philippson, Alfred, **Das Klima Greichenlands.** [The climate of Greece.] Bonn, Ferd. Dümmlers, **1948.** 238 p. tables, 6 charts, 99 refs. **DWB, MH-BH**—A comprehensive analytical study of the climate of Greece and neighboring islands, consisting mainly of a review of the material gleaned from a large number of sources, but arranged systematically according to the following scheme: A) History of Literature on Climate of Greece; climatic regions; B) Pressure and Wind; (special winds: such as the etesian, föhn, etc.), flow of air and sea currents; C) Temperature (frost, ice, earth temperature, radiation, mean and extreme temperatures, diurnal, annual and secular changes); D) Water in the Atmosphere; water vapor, cloudiness, turbidity, rainfall, rainy days, intensity, yearly variations, thunderstorms, hail, snow, snow cover, dew; E) The Mountain Climates of Greece; F) The Seasons; G) Climatic Changes in Historical Time; H) Climatic Zones; I) Climate and Man. Tabular data is arranged and discussed by elements and by regions. Numerous verbal descriptions of weather are quoted. Section on effect of climate on human health and activities is quite extensive. (*Same item* as 4–128 in April 1950 *Meteorological Abstracts.*) *Subject Headings:* **Climatology, Human ecology, Greece.**—*M.R.*

2E–201 551.555.1:551.555.9(262)

†Schneider-Carius, Karl, **Die Etesien.** [The etesien.] *Meteorologische Rundschau,* 1(15–16):464–470, Sept.–Oct. **1948.** numerous refs. **DWB**—A lengthy discussion of historical, synoptic, aerological and geographical aspects of the etesian, a hot, dry, northwest wind, which prevails in the eastern Mediterranean especially in summer. It is maintained that this wind, although occurring with great frequency and duration, is neither a trade wind nor a monsoon in the true sense. (*Same item* as 2–126 in Feb. 1950 *Meteorological Abstracts.*) *Subject Headings:* **Etesian winds, Upper air winds, Eastern Mediterranean.**—*M.R.*

1949

2E–202 551.582:551.506.1(569.4)

*Ashbel, Dov, **The climate of Palestine and adjacent countries during the year 5708 (1947–48).** Annual Report 28th year [in series]. Tel-Aviv, Hassadeh Library, **1949.** 32 p. extensive tables. 1932–1937, 1944–45, 1946–47 at **MH-BH**—Reports appear in Hebrew but consist mainly of tables with English translations of titles. This report is the latest in a series of reports on the climate of Palestine. First pamphlet (checked NNA) tabulated data for 1933–34. Early report includes as subtitle: "table of rainfall in the Upper Euphrates, Syria, Lebanon, Palestine, the Sinai Peninsula and Lower Egypt during the winter 5694 (1933–34)." Later issues cover rainfall, temperature, relative humidity, number of dew nights, evaporation, and wet bulb temperature, all recorded in detail. *Subject Headings:* **Climatological data, Palestine, Near East.**

2E–203 551.574.41(569.4)

*Ashbel, Dov, **Frequency and distribution of dew in Palestine.** *Geographical Review,* 39:291–297, **1949.** 2 figs., tables, 3 refs. **Note on dew in Palestine.** *Ibid.,* 40:144–145, Jan. 1950. **DLC, NNA**—Formation and systems of dew measurement discussed. Regional distribution of dew in Palestine is illustrated, and number of dew nights for selected stations, tabulated. *Subject Headings:* **Dew, Palestine.**

2E–204 551.543 551.542(569)

*Chevrier, Jean, **Sur la pression atmosphérique à l'Observatoire de Ksara (Liban).** [On atmospheric pressure at the Observatory of Ksara (Lebanon).] *Académie des Sciences, Paris, Comptes Rendus,* 229:843–844, **1949.** 2 tables. **DLC**—Twenty-five years of observations are tabulated showing diurnal variations in atmospheric pressure at Ksara Observatory, as well as maximum and minimum values for the period. *Subject Headings:* **Atmospheric pressure, Ksara, Lebanon.**

2E–205 551.582(56)

*Erinç, Sirri, **The climates of Turkey according to Thornthwaite's classifications.** *Association of American Geographers, Annals,* 39:26–46, **1949.** 6 figs., numerous tables, 11 refs., equations. **NNA**—Turkey's climates are analyzed according to original system (based on Köppen) and by new system (Thornthwaite). Figures show: locations of meteorological stations; climates of Turkey according to Thornthwaite's classification; vegetation regions; moisture regions; average annual thermal efficiency; and march of precipitation and potential evapotranspiration in different regions. Extensive tables, appended, list climatic data by months for 53 stations in Turkey: temperature, rainfall, and P–E. *Subject Headings:* **Climatology, Climatological data, Turkey.**

2E–206 551.577.36:551.515(262)

Reichel, Eberhard, **Die Niederschlagshäufigkeit im Mittelmeergebiet.** [Rainfall frequencies in the Mediterranean region.] *Meteorologische Rundschau,* 2(5–6):129–142, May–June **1949.** 13

figs., 2 tables, numerous refs. **DWB**—The paper opens with monthly statistics of various "dynamic processes" averaged by districts (depressions on tracks, bora, sirocco, strong winds, föhn). Charts are given of mean number of rain days in seasons, year and alternate months. The distribution is discussed in light of dynamic processes and of Azores divergence and Arabian-Indian convergence. Relations are clearest in winter; in summer distribution is zonal and in other seasons, transitional. *Subject Headings:* **Precipitation frequencies, Atmospheric circulation, Mediterranean.**—*C.E.P.B.*

2E–207 551.582(56):551.586:634.9

Tschermak, Leo, **Klima und Wald in Anatolien.** [Climate and forest in Anatolia.] *Wetter und Leben*, 2(1–2), 2(1–2):4–13, May **1949.** 16 refs. **MH-BH**—Vegetation differences are described briefly for the different climatic regions of Anatolia. References deal almost entirely with forest vegetation studies, with little or none on climate. (*Same item* as 5–87 in May 1950 *Meteorological Abstracts.*) *Subject Headings:* **Climatology, Forests, Anatolia, Turkey.**

1950

2E–208 551.586(569.4)

*Ashbel, Dov, **Bio-climatic atlas of Israel.** Jerusalem, Hebrew University, Meteorological Dept., [**1950**]. 151 p. 315 figs. (including tabulated data). **NNA**—Excellent collection of data. Maps and diagrams published in this work result from observations taken mainly during the last 30 years in Israel and adjacent countries. Contents of the book include: barometric pressure, wind directions and velocities, rain, dew and evaporation, sun radiation, water and soil temperatures, air temperature, the Hamsin, and temperature and humidity in the Near and Middle East. Samples of summer and winter records of temperature and humidity during normal days and with Hamsin weather, with isopleths of mean hourly values through the year, are included. *Subject Headings:* **Bioclimatology, Climatological data, Israel, Middle East, Near East.**

2E–209 551.585 551.582.1(496, 56)

*Erinç, Sirri, **Climatic types and the variation of moisture regions in Turkey.** *Geographical Review*, 40:224–235, April **1950.** 9 figs., 3 tables, 5 refs. **DLC, NNA**—Author applies Thornthwaite's new classification of climates to Turkey with special reference to variability of moisture regions. Thus it makes possible determination of limits of droughts, of their severity and probable frequency, and provides means for calculating water deficiency. Figures show climatic stationary regions, potential evapotranspiration, seasonal variations of moisture, etc. Appendix gives classification of meteorological stations. (*Same item abstracted* as No. **K-207** in *Meteorological Abstracts.*) *Subject Headings:* **Climatology, Evapotranspiration, Turkey.**

2E–210 551.574.41(569.4)

*Shalem, Nathan, **La rosée en Palestine.** [Dew formation in Palestine.] *La Météorologie*, 4th Ser., No. 19:182–186, July–Sept. **1950.** 3 figs., fold. table. French, English and Spanish summaries p. 182. **DWB**—Dew is of equal importance as rain in the agriculture of Palestine and the Levant since dew occurs most frequently in the dry season. Factors which control dew formation are discussed. Regional distribution of amount and frequency of dew in Palestine, Transjordan, etc. is given by months, by seasons and for the year. October is the month with min. of amount and number of days with dew throughout the area and late spring the time of max. as a rule. (*Same item* as 2.5–132 in May 1950, *Meteorological Abstracts.*) *Subject Headings:* **Dew, Palestine.**—*M.R.*

2E–211 551.586:58(569.4)

Whyte, R. O., **Phytogeographical zones of Palestine.** *Geographical Review*, 40:600–614, Oct. **1950.** 12 figs., 15 refs. **DLC, NNA**—Emphasis on phytogeography, but climatic relations discussed briefly. Graph gives mean annual rainfall in Palestine and adjacent areas and the monthly distribution at 6 representative stations. *Subject Headings:* **Phytogeography, Climatology, Rainfall, Palestine.**

1951

2E–212 551.578.11 551.578.41(569)

Comissot, N. A., **The pH of the rain at Beirut and of the snow on the mountains of Lebanon.** *American Meteorological Society, Bulletin*, 32(1):24–26, Jan. **1951.** 4 tables, ref. **MH-BH**—Electrometrical measurements of the pH of various forms of precipitation were made at Beirut during the rainy season of 1937–1938 and 1938–1939 in order to study the composition and pollution of the atmosphere at the time precipitation is formed. Tables give the frequency distribution of pH and the mean values of pH for the period of investigation. Seasonal variation of the acidity of rain is shown by the data. It is suggested that this investigation might aid study of the formation of cyclonic and anticyclonic systems. *Subject Headings:* **Rain composition, Rainwater analysis, Beirut, Syria.**—*M.L.R.*

2E–213 551.5:016(569)

†Palestine Economic Corporation, Inc., **Bibliography on Palestine and surrounding forestry, meteorology, climatology, and soils.** New York. [1942.] 11 p. 177 refs. Typewritten. **DWB**—Important bibliography containing many references not possible to include in this bibliography. References cover up to 1942. None are annotated. *Subject Headings:* **Climatology, Bibliographies, Palestine.**

SERIALS

2E–214 551.506.1(262, 569)

*Cyprus. **Meteorological observations.** [Begun in 1887]. 1924–1936. unbound. **NNA**—Records kept of temperature and rainfall at various stations in Cyprus for these years. Published as part of meteorological observations made in all British colonies and protectorates. Reports consist of series of single sheets. After 1935 data for Transjordan and Palestine are included on additional sheets reprinted from **Colonial Blue Books.** *Subject Headings:* **Observational data, Cyprus, Transjordan, Palestine.**

2E–215 551.506(569)

*Israel. Central Bureau of Statistics, **Statistical Bulletin of Israel.** Vol. 1, No. 1, July 1949. Bulletin appears monthly or bimonthly, contains climatological tables among many other data. Vol. 1, Nos. 1 to 8, 1949–19— in Hebrew and English. **NNZ**—Each bulletin contains data on climate prepared by the Government Meteorological Service, giving maximum, minimum, and mean temperatures, mean relative humidity, monthly and cumulative rainfall. Deviations from overall averages shown. *Subject Headings:* **Climatological data, Periodicals, Israel.**

2E–216 551.506(569)

***Palestine, Blue Book.** (Section on **Meteorology** included.) London, editions, 1926–27, 1934, 1936, 1937, 1938. **NNZ**—Tables on temperature, rainfall and relative humidity for each of these years, included for Palestine and Transjordan. *Subject Headings:* **Climatological data, Palestine, Transjordan.**

2E–217 551.506.1(569)

*Palestine. Dept. of Civil Aviation, Meteorological Section, **Meteorological observations, 1937 (. . . 1938), including rainfall report for the season 1936/37 (. . . 1937/38).** Lydda, 1939. 10+23 p. maps, tables. **DWB**—Observational data tabulated. *Subject Headings:* **Observational data, Rainfall, Palestine.**

2E–218 551.506.1(569)(05)

*Palestine Exploration Fund, **Quarterly Statement,** 1869–19—, . . . Meteorological observations taken in Jerusalem. **NN**—Tables of observational data appear in issues for about every year, contributed by different observers. *Subject Headings:* **Observational data, Periodicals, Palestine.**

2E–219 551.506.1(569)

Palestine. Dept. of Agriculture and Fisheries, **Annual report** . . . (for each year) 1934–1939. graphs, tables. **NNZ**—Each report contains observational data on pressure, temperature, relative humidity, rainfall, cloud, wind, and evaporation in Palestine. *Subject Headings:* **Climatological data, Periodicals, Palestine.**

2E–220 551.578.1(569)

*Palestine. Dept. of Agriculture and Forests, **Statement of rainfall for season: . . . 1920–1936.** tables. **NNA**—Reports consist of sheets containing tables for each year or period of years, recording rainfall by months at official and non-official stations, sometimes comparing year's total with other years or with average rainfall. *Subject Headings:* **Precipitation, Climatological data, Periodicals, Palestine.**

2E–221 551.506(569)

*Palestine. Dept. of Statistics, **Statistical abstract of Palestine.** Editions 3 to 8, for years 1939 to 1944–45, in English. **NNZ**—Among statistics for numerous subjects are included those for climate and meteorology of Palestine. Tables give data for previous year or years on temperature, relative humidity, vapor pressure and rainfall. *Subject Headings:* **Climatological data, Periodicals, Palestine.**

2E–222 551.506.1(05)(569)

*American University of Beirut, Observatory, **Monthly Bulletin,** Aug. 1921–March 1940. **DWB**—Observational data for the period tabulated. *Subject Headings:* **Observational data, Periodicals, Beirut, Syria.**

2E–223 551.506.1(05)(569)
*American University of Beirut, Observatory, **Monthly Bulletin,** Feb. 1912–March 1915. Incomplete at **DWB**—Bulletins contain tables of observational data from observatory. *Subject Headings:* **Observational data, Periodicals, Syria.**

2E–224 551.506.1(05)(569)
*Syria and Lebanon. Service Météorologique, **Climatologie Aéronautique, 1(2)–2, Observatoire de Ksara, 1938–1939.** tables. **DWB**—Observational data tabulated especially data of interest for aviation. *Subject Headings:* **Observational data, Periodicals, Aviation climatology, Syria, Lebanon.**

2E–225 551.506.1(05)(569)
*Syria and Lebanon, Service Météorologique, **Bulletin,** Fascicule 1–2, 1922; 3, 1925. Beirut, 1922, 1925. map, figs., extensive tables. **DWB**—Meteorological records tabulated, illustrated and briefly discussed. *Subject Headings:* **Climatological data, Periodicals, Syria, Lebanon.**

2E–226 551.506.1(05)(569)
*Lebanon. Observatoire de Ksara, A.M.D.G. Observatoire de Ksara au Liban Saad-Naïl par Beyrouth, Syria, **Bulletin Météorologique,** 2nd Ser., Vol. 1–2, Sept. 1913–April 1914. tables. **DWB**—Observational data are tabulated. *Subject Headings:* **Observatories, Observational data, Periodicals, Ksara Observatory, Lebanon.**

2E–227 551.506.1(05)(569)
*Lebanon. Observatoire de Ksara, **Monthly Bulletin,** May 1910–Dec. 1912. tables. **DWB**—*Subject Headings:* **Observatories, Observational data, Periodicals, Ksara Observatory, Lebanon.**

2E–228 551.501(05)(569)
Lebanon. Observatoire de Ksara, **Annales,** Vol. 1, Nos. 1 and 2 (last), Beirut, **1924, 1927.** 120 p. 46 plates. **MH-BH**—History, construction and work of the observatory are reviewed. Development of observations and study of meteorology taken up along with that of geodesy, seismology, magnetism, astronomy, etc. Meteorological service in Syria and Lebanon as a whole outlined. No data included. (*See also item* 2E–227 below.) *Subject Headings:* **Observatories, Meteorological services, Periodicals, Ksara Observatory, Lebanon.**

2E–229 551.506.1(05)(569)
*Lebanon. Observatoire de Ksara, **Section Meteorologique, Annales,** 13 Vols., 1921–1938. **DWB**—Observational data of the observatory are tabulated at length. *Subject Headings:* **Observatories, Observational data, Periodicals, Ksara Observatory, Lebanon.**

2E–230 551.506.1(05)(569)
*Lebanon, Levant States (French Mandate), Service Central Météorologique, **Bulletin Climatologique,** Sept. 1928–Aug. 1939. Sept. 1930—called: **Bulletin Mensuel, Année Climatologique.** extensive tables. **DWB**—Observational data, tabulated at length. *Subject Headings:* **Observational data, Periodicals, Lebanon.**

2E–231 551.506.1(05)(56)
*Turkey. Meteoroloji Enstitüsü, **Monatliche Witterungsübersichten,** Ankara, 1925–1927. tables (some in German, some in Turkish). **DWB**—Data tabulated and notes made in monthly series. Temperature, cloud, precipitation, etc., recorded. *Subject Headings:* **Observational data, Periodicals, Turkey.**

2E–232 551.506.1(05)(56)
*Turkey. Meteoroloji Genel Müdürlüğü, **Yagis Tevziati Bülteni,** Ankara, 1929–1937. maps, tables. Title and text in Turkish. **DWB**—Observational data from all over Turkey tabulated in series of reports. *Subject Headings:* **Observational data, Periodicals, Turkey.**

2E–233 551.506.1(05)(56)
*Turkey. Meteoroloji Genel Müdürlüğü, **Yillik Meteoroloji Bülteni,** [Annual Meteorological Bulletin], Nos. 1–22, 1925–1946. Ankara, **1932–1950.** tables. In Turkish. **DWB**—Detailed observational data and monthly and annual summaries for each year for principal stations and climatological network in Turkey. *Subject Headings:* **Observational data, Periodicals, Turkey.**

SUPPLEMENTARY MATERIAL

(Came to our attention too late for inclusion in proper order)

2E–234 551.555.8(569.1)

Combier, C., **Les vents de sable du désert de Syrie.** [Sand storms in the desert of Syria.] *Ciel et Terre*, 55:93–103, **1939.** 4 figs., 10 refs.. **DWB, NN**—Descriptive account is given of these storms; their structure and conditions of formation. *Subject Headings:* **Sand storms, Syria.**

2E–235 551.509.1(56)

Synoptik rasat "code" tablolari. [Synoptic observation code tables.] *Turkey, Devlet Meteoroloji Işleri Umum Müdürlüğü, Meteoroloji Memurlarinin Elkitabi, Teknik Seri*, No. 9, **1949.** 126 p. chiefly tables. **DWB**—Details of the 1949 code including all of the code and conversion tables, are given in Turkish, with voluminous notes explaining the codes. *Subject Headings:* **Synoptic codes, Turkey.**—*M.R.*

2E–236 551.2:525.6(56)

Alagöz, Cemal Arif, **Deprem, seylâplar ve meteoroloji işleri.** [Earthquakes, floods and meteorological action.] *Ankara, Üniversitesi, Dilve Tarih-Coğrafya, Fakültesi Dergisi*, 5(1):45–59, Jan.–Feb. **1947.** 6 photos. In Turkish. **DWB**—The main part of the article is concerned with seismological conditions in Turkey, but brief reference is made to the effects of earthquakes in producing floods or tidal waves along coasts, and the meteorological factors which might possibly be involved. *Subject Headings:* **Earthquakes, Tidal waves, Turkey.**—*M.R.*

2E–237 551.524.32(56)

Sanir, Ferruh, **Türkiye'de sicakliğin yillik gidişi.** [Annual variation of temperature in Turkey.] *Ankara, Üniversitesi, Dilve Tarih-Coğrafya, Fakültesi Dergisi*, 5(5):553–561, Nov.–Dec. **1947.** 3 figs. In Turkish. **DWB**—Smoothed curves showing the monthly and annual variations in temperature for 33 stations in Turkey, based on data for 1929–1939, are shown in one chart and a thorough discussion of such variations as are found in different regions of Turkey, presented. Besides the smoothed curves, actual curves for 1935 and 1936 (25 stations) show the anomalies that can occur in any given month or season. *Subject Headings:* **Temperature variations, Turkey.**—*M.R.*

2E–238 551.582(56)

*Sanir, Ferruh, **Ankara ve çevresinin iklimi hakkinda.** [Climate of Ankara and vicinity.] *Ankara, Üniversitesi, Dilve Tarih-Coğrafya, Fakültesi Dergisi*, 6(4):291–318, Sept.–Oct. **1948.** 6 figs., 14 tables. In Turkish. **DWB**—An analytical treatment of all of the geographic aspects of the climate of the Ankara region, based on data for 1929–1944. Local variations, anomalies in certain months or years and effects of wind direction are given special treatment in tables and charts. *Subject Headings:* **Climatology, Ankara, Turkey.**—*M.R.*

2E–239 551.582(479.2,56)

†*Gürsoy, Cevat R., **Samsun gerisinde Karadeniz intikal iklimi.** [Climate of the Black Sea beyond Samsun City.] *Ankara, Üniversitesi, Dilve Tarih-Coğrafya, Fakültesi Dergisi*, 8(1–2):113–129, March-June **1950.** 2 graphs, fold. map, 2 tables, 23 refs. In Turkish. **DWB**—A systematic and scholarly treatment of all of the geographical aspects of the climate of a section of northern Turkey, including considerable tabular and graphic material and a large isohyetal chart of this mountainous area (based on data from a dozen stations). The literature on the meteorology and climatology of the region has been carefully surveyed and annotated. The applications to agriculture and commerce, rather than the synoptic aspects are stressed. *Subject Headings:* **Climatology, Turkey.**—*M.R.*

2E–240 551.515.41:551.553.11

Neumann, J., **Land breezes and nocturnal thunderstorms.** *Journal of Meteorology*, 8(1):60–67, Feb. **1951.** 3 figs., 5 tables, 15 refs. **MH-BH**—The literature on the frequency of nocturnal thunderstorms is reviewed. The role of the land breeze in night thunderstorms along the Israel coast and along the eastern Mediterranean coast in general and the synoptic situation associated with thunderstorms are discussed. On the basis of the thunderstorm data for the eastern Mediterranean and the coasts of the United States it is concluded that the frequency of nocturnal thunderstorm within coastal areas is partly connected with the convergence and divergence of the land and sea breezes and that the curvature of the coast line determines the convergence or divergence of the field of sea and land breezes. A table of the frequency of nocturnal thunderstorms at Lydda Airport, Israel, is given. *Subject Headings:* **Nocturnal thunderstorms, Land and sea breezes, Topographic effects, Israel, Mediterranean.**—*I.L.D.*

PART III. METEOROLOGICAL ARTICLES APPEARING IN RECENTLY ISSUED PUBLICATIONS

Note: The contents of periodicals included in this section are for information only, and will not be listed in the monthly indexes. When material is furnished in advance of data of publication, the pagination may be omitted.

American Meteorological Society, Bulletin, Volume 32, Number 4, April 1951.

Harrison, H. T. and Beckwith, W. B.: **Studies on the distribution and forecasting of hail in Western United States,** p. 119.

Inn, Edward C. Y.: **Photolytic inactivation of ice-forming silver iodide nuclei,** p. 132.

Austin, Pauline M.: **Radar observations of a frontal storm,** p. 136.

Bryson, Reid A.: **A cloudform-stability scale for tropical oceanic areas,** p. 146.

Annalen der Meteorologie, Volume 3, Number 11–12, 1950.

Effenberger, Ernst: **Messmethoden zur Bestimmung des CO_2-Gehaltes der Atmosphäre und die Bedeutung derartiger Messungen für die Biometeorologie und Meteorologie. (1. Teil: Messmethoden),** [Methods of measurement of the CO_2 content of the atmosphere and the importance of such measurements for biometeorology and meteorology. (Pt. 1. Methods of measurement)], p. 321–328.

Israël, Hans: **Das luftelektrische Potentialgefälle in Buchau a. F.,** [Atmospheric electric potential gradient in Buchau on Federsee], p. 329–332.

Bintig, Paul: **Der Einfluss des Windes auf die Wassertemperatur des Ozeans und ihr Zusammenwirken mit der Lufttemperatur. 2. Mitteilung,** [The influence of the wind on the water temperature of the ocean and its connection with the air temperature. Pt. 2], p. 333–340.

Müller-Annen, Hans: **Zur Prognose der Zugbahnen von Tiefdruckgebieten. 1. Teil: Zugbahnen und Geschwindigkeit der Tiefdruckgebiete,** [On the prognosis of tracks of low pressure areas. Pt. 1: Tracks and velocities of low pressure areas], p. 341–351.

Baur, Franz: **Tatsachen zur Frage der Vorbereitung des mitteleuropäischen Winters,** [Facts on the question of the preparation for the Central European winter], p. 352–360.

Rodewald, Martin: **Die Verwendung monatlicher Druckanomalie-Änderungskarten zu langfristigen Zirkulationsprognosen. (Vorläufige Mitteilung),** [The application of monthly charts of change of pressure anomaly to long range forecasts of circulation. (Advance communication)], p. 361–367.

Kleinschmidt, Ernst: **Reinhard Süring. Ein Nachruf,** [Obituary], p. 368–370.

Roediger, Geert: **Verbreitete Gewitterbildung durch Warmlufteinschub über Nordwestdeutschland am 3. Juli 1950,** [Widespread thunderstorm formation through a warm air intrusion over northwest Germany on 3 July 1950], p. 370–374.

Frank, Hans: **Über die Rolle der Wassertemperaturen im Wetter der westlichen Ostsee,** [On the role of the water temperature in the weather of the western Baltic], p. 375–376.

Rufloff, Willy: **Zur jährlichen Schwankung der Erddrehung (Vorläufige Mitteilung),** [On the annual variation of the earth's rotation (advance communication)], p. 376–378.

Journal of Meteorology, Volume 8, Number 2, April 1951.

Kinzer, Gilbert D. and Gunn, Ross: **The evaporation, temperature and thermal relaxation-time of freely falling waterdrops,** p. 71–83.

Sherman, Leon: **On permanent perturbations of zonal atmospheric motion, with applications to low latitudes,** p. 84–94.

Houghton, Henry G. and Cramer, Harrison E.: **A theory of entrainment in convective currents,** p. 95–102.

Syōno, Sigekata: **On the structure of atmospheric vortices,** p. 103–110.

Aubert, Eugene J. and Winston, Jay S.: **A study of atmospheric heat-sources in the Northern Hemisphere for monthly periods,** p. 111–125.

Aubert, Eugene J. and Winston, Jay S.: **Comparison of monthly geostrophic and gradient winds with resultant rawins,** p. 126–127.

Stommel, Henry: **Entrainment of air into a cumulus cloud II,** p. 127–129.

Papers in Meteorology and Geophysics, (Tokyo) Volume 1, Number 1, October 1950.

Masuda, Y.: **On the method of computing vertical motion in the atmosphere** (1st report), p. 1–8.
Masuda, Y.: **On the method of computing vertical motion in the atmosphere** (2nd report), p. 9–19.
Masuda, Y.: **On the method of computing vertical motion in the atmosphere** (3rd report), p. 20–28.
Magata, M.: **Dynamics of the eye of storm,** p. 29–37.
Magata, M.: **Dynamics of the movement of atmospheric vortices,** p. 38–44.
Arakawa, H.: **Transformation of the motion in dynamical meteorology to orthogonal curvilinear coordinates,** p. 45–49.
Ogiwara, M.: **On stochastic interpolation of omitted observation,** p. 50–57.
Arakawa, H.: **On the visibility in the NW-PACIFIC,** p. 58–66.
Sekiguti, T.: **Rural houses and prevailing winds,** p. 67–76.
Kamamoto, H. and Kimura, S.: **Wind-direction and speed robot,** p. 77–80.
Sanuki, M.: **Studies on biplane wind vanes, ventilator tubes and cup anemometers (I),** p. 81–132.
Ooi, S.: **An experimental research of evaporation from a circular dish,** p. 133–147.
Momiyama, M.: **Studies on the time series analysis of the seasonal disease,** p. 148–152.
Simamura. H. and Ichimura, I.: **On the intensities and altitudes of the night-sky light,** p. p. 153–160.

Papers in Meteorology and Geophysics, (Tokyo) Volume 1, Number 2–4, December 1950.

Arakawa, H.: **The vorticity equations in orthogonal curvilinear coordinates,** p. 165–169.
Arakawa, H.: **The conservation law about the horizontal of the total vorticity,** p. 170–172.
Arakawa, H.: **ROSSBY-HAURWITZ's equation for the conservation of vertical vorticity component in the baroclinic atmosphere,** p. 173–174.
Magata, M.: **On the structure of the jet stream,** p. 175–187.
Masuda, Y.: **Dynamics of baroclinic disturbances in the upper troposphere,** p. 188–197.
Matsumoto, S.: **On the coupling between upper waves and surface pressure centers,** p. 198–205.
Takeuchi, M.: **On H. WILD's hypothesis in the theory of foehn phenomena,** p. 206–210.
Matsumoto, S.: **A proposition on the advection problem,** p. 211–216.
Arakawa, H.: **Aerological observations made in the typhoon KITTY by the Central Meteorological Observatory, Tokyo,** p. 217–221.
Miyake, Y. and Sugiura, Y.: **The mechanism of dissolution of the atmospheric chloride into rain water,** p. 222–226.
Sanuki, M.: **Studies on biplane wind vanes, ventilator tubes and cup anemometers (II),** p. 227–298.
Isono, K. and Huziwara, Y.: **Improved code sending type radiosonde,** p. 299–312.
Misaki, M.: **A method of measuring the ion spectrum,** p. 313–318.
Ishikawa, G.: **On the initial phase of geomagnetic storm,** p. 319–336.

Przegląd Meteorologiczny i Hydrologiczny, Warsaw, Number 1, April 1948. In Polish.

Gumiński, Romuald: **Próba wydzielenia dzielnic rolniczoklimatycznych w Polsce,** [The establishment of agricultural-climatic regions in Poland], p. 7–20.
Dębski, Kazimierz: **Parowanie terenowe i jego gradient południkowy na ziemiach niżu sarmackiego,** [Runoff deficit and its meridional gradient on the Sarmatian Plain], p. 21–29.
Gorczyński, Władysław: **System dziesiętny klimatów świata,** [Decimal system of world climates], p. 30–43.
Bac, Stanisław: **Meteorologia a Melioracje Rolnicze,** [Meteorology and agricultural economy], p. 44–47.
Rayski, Jerzy: **O energii atomowej i możliwości jej zastosowania do regulowania pogody,** [Atomic energy and its possible use for control of local weather], p. 48–57.
Ostromęcki, Jerzy: **Parowanie okresu zimowego,** [Evaporation during winter period], p. 58–65.
Parczewski, Władysław: **Zarys historii Meteorologii w Polsce (od X do XIX wieku),** [Contribution to the history of meteorology in Poland (X to XIX century)], p. 66–72.
Skibniewski, Leonard: **Zanieczyszczanie wód płynących,** [Pollution of running waters], p. 73–76.
Kluźniak, Sylwia: **Z działalności Referatu Synoptycznego Wydziału Morskiego PIHM w Gdyni,** [Activity of the forecasting section of the Maritime Observatory in the Baltic Harbor of Gdynia], p. 77–83.
Okołowicz, Wincenty: **"Porównanie klimatu Stanów Zjednoczonych Ameryki Północnej i Europy—Ze specjalnym uwzględnieniem Polski i jej wybrzeży Bałtyckich,"** ["Comparison of the climates of the United States and Europe—with special attention to Poland and her Baltic Coast"], p. 84–88.

Hohendorf, Eugeniusz: **Sto lat istnienia Stacji Meteorologicznej w Bydgoszczy,** [A century of observations made at the Meteorological Station in Bydgoszcz], p. 89–93.
Schmuck, Adam: **Kilka uwag nad pomiarami temperatury w klatce meteorologicznej,** [Remarks concerning the observations of temperature in the meteorological screen], p. 94–97.

Przegląd Meteorologiczny i Hydrologiczny, Warsaw, Number 2–4, December 1948. In Polish.

Iwanowska, Wilhelmina: **Fale radiowe pochodzenia kosmicznego,** [Radio waves of cosmic provenance], p. 3–10.
Gumiński, Romuald: **Niektóre zagadnienia stratosfery,** [Problems of the stratosphere], p. 11–20.
Gorczyński, Wladyslaw: **Porównanie czasu trwania usłonecznienia dla heliografów używanych w Ameryce i w Europie,** [Comparison and interconversion of sunshine duration in the United States and Europe], p. 21–38.
Piotrowski, Stefan: **Uwagi o świeceniu atmosfery,** [Remarks on the brightness of the atmosphere], p. 39–43.
Hurynowicz, Janina: **Higiena pracy umysłowej a pory roku,** [Mental hygiene and the seasons of the year], p. 44–55.
Bincer, Wiktor: **Dane klimatyczne w polskiej medycynie morskiej,** [Climatological data for maritime medicine in Poland], p. 56–61.
Parczewski, Wladyslaw: **Zarys historii Meteorologii w Polsce (od X do XIX wieku). Część II,** [Contribution to the history of meteorology in Poland (X to XIX century). Part II], p. 62–77.
Skibniewski, Leonard: **Drogi wodne w Polsce,** [The waterways in Poland], p. 78–88.

Przegląd Meteorologiczny i Hydrologiczny, Warsaw, Number 1–4, 1949. In Polish.

Dębski, Kazimierz: **Systematyke hydrologii,** [Classification of hydrology], p. 3–14.
Witkowski, Józef: **Korona słoneczna i jej wpływ na atmosferę ziemską,** [The solar corona and its influence on the earth's atmosphere], p. 15–19.
Stenz, Edward: **Sieć wodna w Afganistanie,** [Water resources in Afghanistan], p. 32–41.
Gorczyński, Wladyslaw: **Dzielnik opadowy i metody jego obliczania,** [Precipitation ratio and its computation], p. 42–59.
Koebcke, Fryderyk: **Przebieg temperatury w podziemnym schronie zegarowym Obserwatorium Astronomicznegó U. P.,** [Temperature course in the subterranean clockroom of the Poznan University Observatory], p. 60–71.
Schmuck, Adam: **Przebieg dobowy parowania we Wrocławiu,** [The diurnal course of evaporation at Wroclaw], p. 72–78.
Parczewski, Wladyslaw: **Zarys historii Meteorologii w Polsce (od X do XIX wieku). Dokończenie,** [Contribution to the history of meteorology in Poland (X to XI century). End], p. 79–95.

Royal Meteorological Society, Quarterly Journal, Volume 77, Number 332, April 1951.

Goody, R. M. and Robinson, G. D.: **Reviews of modern meteorology-2. Radiation in the troposphere and lower stratosphere,** p. 151–187.
White, Robert M.: **The meridional eddy flux of energy,** p. 188–199.
Priestley, C. H. B.: **Physical interactions between tropical and temperate latitudes,** p. 200–214.
Starr, V. P. and White, R. M.: **A hemispherical study of the atmospheric angular-momentum balance,** p. 215–225.
Sutcliffe, R. C.: **The quasi-geostrophic advective wave in a baroclinic zonal current,** p. 226–234.
Scorer, R. S.: **Billow clouds,** p. 235–240.
Best, A. C.: **The size of cloud droplets in layer-type cloud,** p. 241–248.
Chalmers, J. Alan: **The origin of the electric charge on rain,** p. 249–259.
Bleeker, W. and Andre, M. J.: **On the diurnal variation of precipitation, particularly over central U.S.A., and its relation to large-scale orographic circulation systems,** p. 260–271.
Thompson, B. W.: **The upper-level flow-structure near typhoons,** p. 272–282.
Lacy, R. E.: **Observations with a directional raingauge,** p. 282–292.
Gunn, D. L. and Yeo, Douglas: **The Bellani spherical pyranometer or radiation integrator; the calibration of an improved model, and some suggestions for further improvements,** p. 292–301.
Gordon, A. H.: **Seasonal variation of the axes of low-latitude pressure and divergence patterns over the ocean,** p. 302–306.
Glasspoole, J.: **Rainfall over Great Britain and Northern Ireland during the decade 1940–49,** p. 307–308.
Knighting, E. and James, R. W.: **Large-scale vortex motion in the atmosphere,** p. 309–310.

Wetter und Leben, Volume 3, Number 3–4, March 1951.

Bruzek, A.: **Die veränderlichen Strahlungen der Sonne,** [The variable radiation from the sun], p. 33–36.

Hader, F.: **Der Semmering-Starkregen vom 5. Juni 1947,** [The heavy rain at Semmering on June 5, 1947], p. 36–40.

Sauberer, F.: **Das Licht im Boden,** [Light in the soil], p. 40–44.

Hänsel, Hermann: **Vernalisation bei negativen Temperaturen,** [Vernalization at minus temperatures], p. 44–47.

Tollner, Hanns: **Bericht über den Zustand einiger Tauerngletscher am Ende des Sommers 1950,** [Report on the state of some Tauer glaciers at the end of the summer of 1950], p. 47–49.

Neunteufl, Josef: **Wintergewitter, St. Elmsfeuer und Kugelblitz,** [Winter thunder, St. Elmo's fire and ball lightning], p. 49–57.

Kutschera, L.: **Planzensoziologische** (*sic*) **Beobachtungen im Lavanttal,** [Plant sociological observations in Lavant Valley], p. 57–61.

Held, A.: **Eine Lichtspiegelung vom Attersee,** [A light reflection from the Attersee (Lake)], p. 62.

Zeitschrift für Meteorologie, Volume 4, Number 9, September 1950.

Rossmann, F.: **Über den Föhn auf Spitzbergen und Grönland,** [On the Föhn in Spitsbergen and Greenland], p. 257–262.

Wehner, Hans: **Das Auftreten hoher Perlmutterwolken über Südnorwegen,** [The occurrence of high mother-of-pearl clouds over southern Norway], p. 262–268.

Hoffmeister, J.: **Das Tagesmittel der Temperatur aus den Terminbeobachtungen um 1^h, 7^h, 13^h, 19^h,** [The daily mean temperature from fixed observations at 1, 7, 13, 19 h], p. 269–274.

Rössler, Fritz: **Über die Trägheit von feuchten Thermometern,** [On the lag of wet-bulb thermometers], p. 274–284.

U. S. Weather Bureau, Washington, D. C., Daily Weather Map Backs

From time to time articles of general interest are printed on the back of the Washington Daily Weather Map. The material is intended to acquaint subscribers to the map with the uses which are made of weather maps and associated information, and also to explain or discuss certain features or seasonal characteristics of the maps, how they are prepared, and the sources of the basic data.

The program began in October 1944. In this six years through October 1950, special material has been printed on more than 650 issues of the map. Some of these printings were revisions or reprints of earlier articles and some were the regular monthly printing of certain climatological charts. Altogether, nearly 250 different articles have appeared.

Many unusual photographs and diagrams have been included as illustrative material in the following presentations. The textual material is usually brief and descriptive, but a great deal of research and imagination has gone into each article.

No attempt has been made to catalog this material by subject matter. It will be noted that some of the more popular articles are repeated from time to time, and new ones are constantly appearing. Articles are listed chronologically according to date of first publication.

Other presentations, which are not listed herein have appeared regularly. These fall into two major categories:

(1) Analyzed series of charts. These are studies of selected situations which represent some interesting or unusual weather development.

(2) Climatological charts for Washington, D. C. These appear as a set of 4 charts each month, representing temperature and precipitation frequencies for each day of the month and for each year of record.

Titles of articles which have appeared are listed here for reference. It has not been possible to maintain stocks of all this material and the Weather Bureau is not in position to fill requests for back numbers except in a limited manner for some of the more recent articles. However, bound volumes or back files of the Daily Weather Map are available for reference in many libraries and Weather Bureau offices as well as the central Weather Bureau Library in Washington. Correspondence regarding these articles should be addressed to: Chief, U. S. Weather Bureau, Washington 25, D. C.

The North Atlantic hurricane of September 8–16, 1944.			10–31–44
How the daily weather map is made—A description of the process from the original observation to the finished printed map.	11–18–44	5–12–45	4–20–46
Hurricanes as shown on daily weather maps.		11–25–44	10–6–45
Pilot balloon stations in the United States and Alaska.		12–16–44	6–21–45

Radiosonde stations in the United States and Alaska.				12–19–44	6–23–45
Airway meteorological services in the United States, 1944.				12–21–44	6–25–45
Primary observing stations in the United States and adjacent countries, 1944.					12–23–44
Departure of daily temperatures from normal—Washington, D. C., 1944.					1–18–45
The fruit-frost service—How the reports and forecasts of this special weather service aid growers in their fight against crop-killing temperatures.			1–24–45	11–2–45	11–26–46
"Degree-days" in the United States—What the degree-day is; how and why it is used; how weather bureau records form the basis for the degree-day maps.	2–23–45	11–6–45	2–15–46	4–21–47	2–5–48	11–4–49
Spring weather and the victory garden—How and when spring comes to the United States—Likelihood of frost—Some Weather Bureau maps and charts to help the victory gardener.					3–16–45
"Fire-weather" forecasting—How mapping and forecasting the weather has become and important aid in forest fire control.					3–21–45
Clouds and the weather map—Kinds of clouds, classification, cloud definitions.			4–14–45	9–7–45	1–24–46	4–18–46
The Ohio River Flood of March 1945—Some Weather Bureau maps and charts in connection with a major flood.					4–27–45
The structure of fronts—As shown on the daily weather map.				5–22–45	6–13–46	8–1–47
Administrative and forecast districts.				5–24–45	10–25–46
It isn't the heat, it's the humidity.	5–31–45	8–22–45	6–14–46	8–21–47	6–23–50
Forecasting storms on the Great Lakes.				6–9–45	11–12–46
Pilot balloon observations—A picture story.					6–11–45
Weather and the railroads—The use of weather maps and forecasts as an aid to transportation.				6–18–45	11–17–46
Weather and cranberries—An example of the role of weather maps and forecasts as an aid to agriculture.				7–6–45	11–17–45	11–13–46
Aviation and the weather map—Part 1—Development of the aviation weather service.					7–16–45
An analysis of the hailstorm of June 2, 1945, in the vicinity of Washington, D. C.					8–11–45
Raisins and rain warmings—An example of the role of weather maps and forecasts as an aid to agriculture.					8–4–45
Weather and Public utilities—The use of weather maps and forecasts as an aid to industry.				10–16–45	11–18–46	12–28–47
Tornadoes.		12–8–45	6–7–46	4–2–48	6–13–49	6–13–50
Washington snowstorm—The Washington, D. C. snowstorm as shown on the daily weather maps for December 18–19, 1945.					12–21–45
To Alaska by air—Development of air transport service; methods of forecasting; scenic routes made safe.					12–27–45
Weather and livestock—Weather maps and forecasts in connection with livestock raising.				1–23–46	11–14–49
Weather and harbor traffic—An example of the use of weather maps and forecasts as an aid to transportation.					2–5–46
River and flood forecasting service—Part One—The hydrologic cycle.				3–12–46	4–22–48
River and flood forecasting service—Part Two—Monthly flood expectancies at selected river stations.			3–26–46	6–14–47	4–28–48	12–16–49
Spring weather and the home garden—How and when spring comes to the United States—Likelihood of frost—Some Weather Bureau maps and charts to help the home gardener.			3–28–46	3–15–48	4–5–49	2–23–50

The Beaufort wind scale—The history of the Beaufort scale. 5–13–46

River and flood forecasting service—Part Three—U. S. Weather Bureau river districts. 5–16–46

Weather and bananas—The function of weather maps and forecasts in the shipping of a nutritious delicacy. 5–20–46 6–19–46

Weather and vacations. 6–10–46 7–16–47

Grain spoilage and rainfall—Part I—This series of maps and articles is an example of Weather Bureau information furnished in connection with the preservation of critical food supplies. 6–20–46

River and flood forecasting service—Part Four—Reports and warnings. 6–22–46

Grain spoilage and rainfall—Part II. 7–1–46

Grain spoilage and rainfall—Part III. 7–11–46

Minute men in storm and flood—How advance information of disaster aids precautions, evacuation, relief, and restoration. 7–17–46 3–19–48 12–8–49

Grain spoilage and rainfall—Part IV. 7–21–46

Grain spoilage and rainfall—Part V. 7–26–46

Weather in Walla Walla—An example of the use of weather maps and forecasts as an aid to agriculture. 8–7–46

Freezing temperatures and the motorist—Average dates of first killing frost in fall. 9–30–46 10–17–47 10–20–50

Hurricane fatalities—How a modern warning service has reduced loss of life in hurricanes. 10–1–46 7–9–47 7–16–48 9–29–49 9–15–50 Rev. 2–23–51

48 years of weather service—How the services of the local weather man save the Toledo area more than a million dollars a year. 10–28–46

Weather and the motorist—Weather forecasts and information as an aid to those who travel. 11–9–46

Winds above the clouds—Weather Bureau rawinsonde and radiosonde stations in the United States and Alaska. 11–19–46 6–20–50

Weather in Death Valley—One example of the extreme conditions under which some of our weather observations have been maintained. 12–3–46 7–25–47

Schedule of weather broadcasts—Made by Weather Bureau personnel from microphones installed in Weather Bureau offices (as of November 1, 1946). 12–23–46

Weather on Mount Washington—Arctic weather conditions in New Hampshire. 2–3–47

Frost without freeze—What frost is; frost and air drainage and reports. 3–4–47 11–14–47 12–6–48 10–28–49

Weather and winter sports—Weather forecasts and reports help determine when and where to plan your winter recreation. 3–21–47 2–17–48 3–2–49 12–23–49 12–22–50

Weather and sugar beets—An example of the role of weather maps and forecasts as an aid to agriculture. 3–27–47

Radiosonde and rawinsonde stations in the United States from which reports are available on national teletype services. 5–2–47 4–7–48 7–22–48 2–4–49 9–1–49 8–8–50

Winds aloft stations in the United States from which reports are available on national teletype services. 5–5–47 4–5–48 7–21–48 2–7–49 9–6–49 8–4–50

Weather broadcasts—An example of the dissemination of weather forecasts, warnings, and other information by direct radio broadcasts from Weather Bureau offices. 6–20–47

Our voluntary weather observers—Five thousand citizens in all parts of the country maintain government weather records without pay. 6–27–47 11–9–49

Forecasting at Fresno—An example of the public service given by one local Weather Bureau office. 7–11–47

Weather and fruit-growing—How weather information aids New York orchardists. 8–22–47

Man's control of a river begins with the weather . . . in the Tennessee Valley. 11–28–47

Public utilities battle winter weather electric power, transportation and gas companies depend heavily on weather information and forecasts. 3–10–48

Weather service for pilots—Sources of special aviation weather advices. 5–10–48

Automatic weather stations—Supply the daily weather map with vital data. 7–27–48 12–29–49

Industry's own weather men—1. The consultant meteorologists. 9–13–48 12–7–49

Weather and forest fires—How weather maps and forecasts help keep the nation's forests green. 9–29–48 10–11–49 4–7–50

The cooperative weather program in Mexico. 6–29–49 12–9–49

How to forecast your own minimum temperatures. 11–25–49

Industry's own weather men—2. The airline meteorologists. 12–2–49

Weather in business—Weather maps, forecasts and data are used in public and private services for the business man. 12–12–49

Some uses of weather forecasts and reports—Examples of the great variety of applications of weather information. 12–14–49

The cooperative weather program with the Bahamas—And the role of the Bahama Islands in the Weather Bureau hurricane warning service. 12–19–49

Cooperation with Cuba—How mutual assistance of Cuba and the United States in the weather service is an aid to commerce by air and sea and promotes safety from storms and hurricanes. 1–9–50

Cooperation with Canada—How common agreement and mutual understanding in the weather services help the economy of both countries. 2–2–50

Weather and alfalfa seed—An example of the role of weather maps and forecasts as an aid to agriculture. 2–10–50

Weather and plant diseases—How weather maps and forecasts aid in the cooperative program of the Department of Agriculture, the National Agricultural Chemical Association, and the Farm Equipment Institute in reducing one of the great farming hazards. 3–28–50

Weather service cooperation with Bermuda—How the Mutual exchange of weather data for maps and forecasts forms a vital link in service for aircraft and shipping, and for the populations of the Atlantic and Gulf Coast States and the West Indies. 5–9–50

Some uses of Weather Bureau information—Examples of the great variety of applications—Part Two. 5–23–50

Growing degree days—How weather reports and forecasts are used as an indication of plant growth and harvesting dates. 8–24–50

Local storm warning networks—Warnings can save lives and personal property. 9–21–50

Weather and cotton—Some examples of how weather maps and forecasts aid in cotton production. 10–17–50

Weather and intracoastal boating—How weather reports and forecasts can be secured by telephone and radio broadcasts to help private yachtsmen and commercial shippers on the intracoastal waterway and adjacent coastal areas. 12–13–50

Weather and electric power flashovers—The Weather Bureau and private meteorologists join forces in using weather data and forecasts in solving an industrial problem for electric power plants. 1–24–51

Industry's own weather men—3. The company meteorologists. 1–30–51

Weather and sheep—How weather maps and forecasts help protect the nation's source of lamb and wool. 3–13–51

PART IV. AUTHOR AND SUBJECT INDEX

In this section will be found reference to the numbers given at the head of each abstract or entry. In Part I each entry begins with the number 2.5–, and in the bibliography on Climatology of the Near East, (Part II) each entry begins with the number and letter 2E–. This index is divided into three parts:

Index of Authors Index of Subjects Index of Geographical Locations

INDEX OF AUTHORS

Abd-El-Al, Ibrahim, 2E–157, 2E–195
Ackerknecht, Erwin H., 2E–186
Alagöz, Cemal Arif, 2E–236
Alvarez Castrillón, M., 2.5–25
American University of Beirut, Observatory, 2E–222, 2E–223
Anderling, Leo, 2E–4
Anderson, E. A., 2.5–77
Anderson, L. J., 2.5–30
Andre, Milo J., 2.5–80
Annalen der Hydrographie und Maritimen Meteorologie, 2E–45
Antonik, Bertold, 2.5–131
Arakawa, H., 2.5–75
Arden-Close, Charles Frederick, 2E–151
Arvanitakis, G. L., 2E–21
Ashbel, Dov, 2E–90, 2E–105, 2E–108, 2E–109, 2E–115 to 2E–118, 2E–121, 2E–122, 2E–125 to 2E–127, 2E–136 to 2E–139, 2E–145, 2E–146, 2E–152, 2E–158, 2E–173, 2E–179, 2E–180, 2E–202, 2E–203, 2E–208
Astapovich, I. S., 2.5–203

Bac, Stanislaw, 2.5–10
Bamford, J. A., 2E–62
Barbier, D., 2.5–201
Barnes, T. A., 2.5–155
Bartels, Julius, 2.5–53
Baruch, Abraham, 2E–72, 2E–81
Bates, D. R., 2.5–49
Battan, Louis J., 2.5–81
Bauer, G., 2E–110
Belger, Wilhelm, 2.5–137
Bellamy, C. V., 2E–22
Bereskin, V. A., 2E–91
Berg, Hellmut, 2.5–112
Bidault-de-l'Isle, G., 2.5–168
Biel, Erwin R., 2E–174
Bincer, Viktor, 2.5–187
Blanckenhorn, Max, 2E–34, 2E–63, 2E–92
Bleeker, Wouter, 2.5–84
Blüthgen, J., 2.5–171
Bocks, Shirley, 2.5–165
Boerema, J., 2.5–91
Booker, H. G., 2.5–51
Bossolasco, Mario, 2.5–113
Botley, Cicely M., 2E–153
Bouët, Max, 2.5–115
Braun, Otto, 2.5–138
Brewer, W. A., 2.5–28
Brier, Glenn W., 2.5–44
Briggs, J., 2.5–103
British East Africa. Meteorological Dept., 2.5–26
Brückner, Werner, 2.5–142
Brun, Edmond, 2.5–133
Butler, H. E., 2.5–192
Buxton, P. A., 2E–100
Byers, Horace R., 2.5–81

Čadež, Marjan, 2.5–108
Carter, George F., 2E–186
Chalmers, Alan J., 2.5–200
Champion, D. L., 2.5–111
Chang, P. C. (comp.), 2.5–8
Chaplin, Thomas, 2E–3
Chapman, Sydney, 2.5–55
Chaxel, R. du, see du Chaxel, R.
Chevrier, Jean, 2E–181, 2D–204
Chicago. University. Institute of Meteorology, 2E–175
Christ, H., 2E–29
Clayton, Henry Helm, 2E–193
Clerget, Marcel, 2E–106
Coblentz, W., 2.5–97
Collins, Joyce A., 2.5–99
Combier, Charles, 2E–103, 2E–111, 2E–182, 2E–196, 2E–234
Comissopoulos, N., 2E–112
Comissot, N. A., 2E–128, 2E–212
Conrad, V., 2E–78, 2E–167
Coutagne, A., 2.5–156
Crichton, J., 2.5–20

Debski, Kazimierz, 2.5–157
de Terra, Helmut, 2E–183
de Tchihatcheff, P., 2E–1
Dix, W., 2E–168
Douglas, R. G., 2.5–18
Dubertret, L., 2E–198
du Chaxel, R., 2.5–139
Durward, J., 2E–93, 2E–129

LIST OF PERIODICALS

Note: This list contains the titles of the periodicals which regularly contain material on meteorology or related fields and it comprises only a small percentage of the periodicals from which pertinent articles are abstracted.

In this list the preferred form of title entry is given in bold face type. If the title is distinctive, the name and headquarters of the issuing society or organizations follows the title. If the title is not distinctive (for instance, Bulletin, Journal, Trudy, Mitteilungen), the entry consists of the issuing body followed by the title.

PERIODICALS IN WHICH METEOROLOGICAL ARTICLES REGULARLY APPEAR

Académie des Sciences, Paris, Comptes Rendus.
Akademiia Nauk, SSSR, Izvestiia, Ser. Geogr. i Geofiz., [Moscow].
American Geophysical Union, Transactions, National Research Council, Washington.
★**American Meteorological Society, Bulletin,** [Boston].
★**Annalen der Meteorologie,** Meteorologisches Amt für Nordwestdeutschland, Hamburg.
Annali di Geofisica, Istituto Nazionale di Geofisica, [Rome].
★**Archiv für Meteorologie, Geophysik und Bioklimatologie, Ser. A and Ser. B,** [Vienna].
Australian Journal of Scientific Research, Ser. A, Physical Sciences, [Melbourne].
Ciel et Terre, Société Belge d'Astronomie, de Météorologie et de Physique du Globe.
Geofisica Pura e Applicata, Istituto Geofisica Italiano, [Milan].
Geophysical Magazine, [Central Meteorological Observatory, Toyko].
Hemel en Dampkring, Nederlandse Vereniging voor Weer- en Sterrenkunde, [The Hague].
★**Időjárás,** Az Országos Meteorológiai és Földmágnességi Intézet, [Budapest].
★**Indian Journal of Meteorology and Geophysics,** [Delhi].
Journal of Geophysical Research, [Washington].
★**Journal of Meteorology,** American Meteorological Society, [Boston].
★**Journal Scientifique de la Météorologie,** Société Météorologique de France, [Paris].
★**The Marine Observer,** Air Ministry, Meteorological Office, London.
★**The Meteorological Magazine,** Air Ministry, Meteorological Office, London.
★**Meteorological Society of Japan, Journal,** Second Series, Kisho Shushi, [Tokyo].
★**Meteorologické Zprávy,** Státní Meteorologický ústav v Praze, [Prague].
★**La Météorologie,** Société Météorologique de France, [Paris].
★**Meteorologische Rundschau,** Bad-Kissingen, [U. S. Zone, Germany]
★**Monthly Weather Review,** U. S. Weather Bureau, Washington, D. C
Nature, [London].
★**Nimbus,** Sociedad Meteorológica de Bolivia, [La Paz].
Polarforschung, Archiv für Polarforschung in Kiel, [Kiel, British Zone, Germany].
★**Revista Meteorológica,** Junta Nacional de Meteorología, Montevideo.
★**Rivista di Meteorologia Aeronautica,** Associazione Culturale Aeronautica, [Rome].
★**Royal Meteorological Society, Quarterly Journal,** [London].
Royal Society of London, Proceedings, Ser. B.
★**Tellus,** Svenska Geofysiska Föreningen, Stockholm.
Vsesoiuznoe Geograficheskoe Obshchestvo, SSSR, Izvestiia, [Moscow-Leningrad].
★**Weather,** Royal Meteorological Society, [London].
★**Weather Development and Research Bulletin,** Australia, Meteorological Branch, [Melbourne].
★**Weatherwise,** Amateur Weathermen of America, Philadelphia.
★**Wetter und Leben,** Österreichische Gesellschaft für Meteorologie, [Vienna].
★**Zeitschrift für Meteorologie,** Meteorologisches Observatorium, Potsdam, [U. S. S. R. Zone, Germany].

★ Indicates those periodicals which are primarily meteorological.

TABLE OF CONTENTS

Meteorological Abstracts and Bibliography. Volume 2, Number 5, May 1951

Foreword iii
Explanations iv

PART I. ABSTRACTS OF CURRENT METEOROLOGICAL MATERIAL

General Meteorology 333
Meteorological Observations and Instruments 335
Methods of Observation 335
Observational Data 337
Instruments 337
Synoptic Analysis and Forecasting 339
Structure and Physics of the Atmosphere 341
Structure of the Atmosphere 341
Mechanics and Thermodynamics of the Atmosphere 344
General Circulation 345
Atmospheric Disturbances 347
Radiation and Temperature 350
Radiation 350
Temperature 352
Atmospheric Pressure and Wind 353
Pressure 353
Wind 354
Aqueous Vapor and Hydrometeors 356
Evaporation 356
Cloud Physics and Icing 357
Precipitation 359
Hydrometeorology 363
Climatology and Bioclimatology 365
Climatology 365
Climatology of Particular Places 366
Microclimatology 368
Bioclimatology—Applied Climatology 369
Miscellaneous Applications 370
Optical Phenomena 370
Electrical Phenomena 371
Aurora 372

PART II. SELECTIVE ANNOTATED BIBLIOGRAPHY ON THE CLIMATOLOGY OF THE NEAR EAST

Outline of Contents 373
Climate of the Near East 375
Bibliography 375
Serials 402
Supplementary Material 404

PART III. METEOROLOGICAL ARTICLES APPEARING IN RECENTLY ISSUED PUBLICATIONS 405

PART IV. AUTHOR AND SUBJECT INDEXES

Index of Authors 412
Index of Subjects 415
Index of Geographical Locations 418

List of Periodicals ..... Cover 3